Predicting the Impact of Health States on Well-being: Explanations and Remedies for Biased Judgments

Emma Walsh

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City University, London

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City, University of London
Northampton Square
London
EC1V 0HB
United Kingdom

T +44 (0)20 7040 5060

THE FOLLOWING PARTS OF THIS THESIS HAVE BEEN REDACTED FOR COPYRIGHT REASONS:

What Would it be Like for Me and for You? Judged Impact of Chronic Health Conditions on Happiness. Pg.51-74

This thesis is dedicated to my parents,

Carole and Barry, who have always believed in me,

and to my husband,

Nigel, who is always there for me.

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Declaration

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Abstract

Affective forecasting research has demonstrated that people overestimate the impact of health states on both their own happiness and other peoples' happiness, resulting in a disparity between a healthy sample's predictions and the actual well-being of people living with that health state. The aim of this thesis was to explore these judgments, examine proposed explanations for the bias, and test existing and new methods for improving the accuracy.

Using questionnaires, respondents predicted the impact of health states on either their own or on other peoples' well-being. No actual difference was found in the happiness of people living and not living with health states but both groups made biased forecasts, although the predictions of respondents living with health states were biased to a lesser extent.

As an explanation for inaccurate forecasts, the confound between whether a judgment was made for self happiness or others' happiness, and whether or not the person was living with a health state, was found not to account for the bias. However, focusing too much attention on the impact of the health state, known as the *focusing illusion,* was concluded to be a plausible explanation. Although existing methods intended to reduce the effect of the illusion did not diminish the bias, a new method which encouraged consideration of the emotional impact of an event successfully moderated predictions.

Furthermore, the bias was reduced by encouraging contemplation of the wider range of well-being of people living with health states, suggesting that biased forecasts were caused by anchoring on an extreme case. Additionally, receiving information on the happiness of people living with health states reduced the bias, but had less of an effect when presented with health state information. Thus the practicality of this remedy would be diminished in situations where health state information could not be withheld. Practical suggestions for improving affective forecasts and directions for future research are discussed.

Chapter 1: Main Introduction

1.1 Affective Forecasting and the Impact Bias

How happy would you be if you won the lottery jackpot? How satisfied with life do you think people are who are awaiting a liver transplant? Research into affective forecasting is interested in the accuracy with which people can answer questions such as these, where people are asked to predict the impact of events on both their own and other peoples' emotional well-being. From predicting how a job promotion will affect happiness, to evaluating how major surgery impacts well-being, to judging the quality of life (QOL) of someone diagnosed HIV positive, people are capable of generating judgments as to how they or someone else currently feels or will feel in the future. However, despite the ease and frequency with which these judgments can be made, research has shown that people are not very good at making these affective forecasts. Whilst we are accurate at predicting the valence of our response to an event - we appreciate that a holiday would make us happier but having our car stolen would make us less happy - we overestimate the intensity and the duration of the emotional response to an event.

Gilbert, Driver-Linn, and Wilson (2002) termed this overestimation the *impact bias* and suggested that people overestimate the long-lasting impact that events will have on their and other peoples' emotional well-being. This bias in judgment has been shown for the predicted impact of a wide variety of events: for both positive events, such as predicting the impact of receiving an exam grade better than expected, and the experience of the Christmas holidays (Buehler & McFarland, 2001); and negative events, such as predicting the impact of a break-up of a relationship, failure to achieve tenure, and receiving negative personality feedback (Gilbert, Pinel, Wilson, Blumberg,

& Wheatley, 1998). Furthermore, the bias has been shown in judgments as to the impact of familiar events which people have previous experience of e.g. missing a train (Morewedge, Gilbert, & Wilson, 2005), as well as novel events such as judging the impact of paraplegia (Ubel et al., 2001).

1.2 The Impact Bias for Health States

One domain in which evidence for the impact bias has been frequently demonstrated is in the perceived impact of health states, where people are asked to make judgments as to the impact of various health states and treatments on both their own well-being and other people's well-being. It has been shown that people not living with a health state overestimate the impact and believe that life would be far worse than people actually living with that health state report that it is. Riis et al. (2005) found that a healthy sample imagining life on dialysis predicted that they would experience negative moods whereas patients on dialysis reported positive moods. Similarly, in a time trade-off utility measure, a healthy sample was willing to trade an average of 44 months of life to live without a colostomy whereas patients with a colostomy would only trade an average of 19 months (Smith, Sherriff, Damschroder, Loewenstein, & Ubel, 2006). This bias in judgment has resulted in a disparity between the predictions of people not living with the health state and the actual experiences of people living with the health state (Boyd, Sutherland, Heasman, Tritchler, & Cummings, 1990; Hurst et al., 1994; Riis et al., 2005; Sackett & Torrance, 1978; Smith et al., 2006). This discrepancy in their judgments is referred to as the *disability paradox* (Albrecht & Devlieger, 1999), which exists in spite of the fact it has been shown that there is no or little difference in the happiness of people living with a range of health

states and a healthy sample (Brickman et al., 1978; Riis et al., 2005; Schulz & Decker, 1985).

1.3 Implications of Biased Affective Forecasts

What are the implications of not accurately predicting the impact of an event? For the most part, an essential element of good decision making is the ability to accurately predict how events will make a person feel, and therefore inaccurate affective forecasts can have implications on both decisions and the subsequent outcomes. *Decision affect theory* suggests that people often use their affective forecasts as a guide to choice (Mellers & McGraw, 2001). When choosing between several options, people predict their emotional reaction to possible outcomes of the options, take into account the chance that these outcomes will occur, and choose the option with the highest positive emotional outcome. If people are not accurate in their forecasts as to how the different outcomes would affect their emotional well-being, then this might lead them to make the wrong decision and ultimately make a suboptimal choice.

Affective forecasts can also influence decisions in situations where people face a gamble between a loss and a gain. People incorrectly forecast that a loss will have more of an emotional impact than a gain, despite people who are experiencing both losses and gains reporting an equal impact (Kermer, Driver-Linn, Wilson, & Gilbert, 2006). Even when participants considering a monetary gamble could potentially win more money than they could lose, they incorrectly overestimate the impact of losing (Kermer et al., 2006). People fail to realise that they will cope with losses and instead remain averse to potential losses, leading them to make decisions which do not result in a maximisation of emotional or economic benefit.

In the context of health states and treatments, not accurately anticipating the impact can influence how we regard someone living with that health state as well as our acceptance of risk associated with treatments. Moreover, biased affective forecasts can impact on the validity of cost-effectiveness analyses which use these forecasts in calculations of resource allocation. For example, the National Institute for Clinical Excellence (NICE) determines which drugs and treatments should be funded by the National Health Service (NHS) by weighing costs against benefits. In calculating benefit, an assessment of improvement in QOL is taken into consideration which currently non-patients provide (NICE, 2004). This ultimately results in non-patients determining which drugs/treatments are available to patients on the NHS. As non-patients fail to accurately evaluate the impact of health states on well-being, this could result in them failing to anticipate patients' preferences, leading to a mis-prioritisation of resources. A proposed solution would be for organisations like NICE to use patients' views in cost-effectiveness analyses. However this is not as straightforward as it might appear as, like non-patients, patients' judgments are susceptible to error. For example, patients do not take into account the degree to which they have adapted to their health state when evaluating their QOL, unless they are prompted to do so. Furthermore, even if patients were aware of this adaptation process, due to bias in recalling previous emotions they would not accurately recall how they felt in the past (Dolan & Kahneman, 2008). Therefore using the judgments of either non-patients or patients could lead to a potential misappropriation of resources.

Affective forecasts have also been shown to influence preventative health behaviours. Chapman and Coups (2006) demonstrated that peoples' predicted

reduction in worry and regret were strong predictors of their decision to receive the influenza vaccination. Sieff, Dawes, and Loewenstein (1999) found that people overestimated their response to HIV test results - they experienced less distress with a positive result than predicted and experienced more distress with a negative result than predicted – which Sieff and colleagues concluded may stop some people from getting tested. Not correctly anticipating the impact could lead to avoidance of preventative measures, with serious consequences.

1.4 Explanations for Biased Affective Forecasts

Many different explanations have been proposed as to why people are biased in their judgments as to the impact of events. Some of these suggestions have focused on the fact that despite sometimes being familiar with an event, e.g. getting delayed in traffic, we do not learn from our previous experiences that the impact of such events is short-lived. One of the reasons for our failure to learn is that we actually demonstrate a *retrospective* impact bias when remembering our past experiences, and incorrectly recall that events had more of an impact on our emotions than they actually did (Wilson, Meyers, & Gilbert, 2003). To add to this, people can not accurately remember how they felt (Levine & Safer, 2002; Wirtz, Kruger, Scallon, & Diener, 2003) and when reflecting back on past experiences tend to recall extreme instances of the event rather than a typical case (Morewedge et al., 2005).

Another suggested cause of the impact bias is that people *misconstrue* crucial elements of the future event, especially if the event is novel, and fail to take into account the details of the event which may have an impact on their emotions (Gilbert et al. 1998). People fail to realise that their imagined version of the event is only one of

many and could be very different from the event that they will actually experience (Dunning, Griffin, Milojkovic, & Ross, 1990). In fact, people are not conscious of how much their imagination of the future is based on subjective construals rather than on objective representations (Griffin & Ross, 1991). This will result in a bias in judgments if people misconstrue an event to be more significant than it actually is.

One explanation which has dominated much of the research exploring the bias in affective forecasts is the *focusing illusion*. It is suggested that people demonstrate this illusion by focusing too much attention on the impact of the target event and not enough attention on the impact of other events (Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000). Respondents predicting the life satisfaction of people in California and the Midwest of America focused too much attention on the perceived superiority of the Californian climate and subsequently judged that people there were more satisfied, despite there being no difference in the satisfaction of the two groups (Schkade & Kahneman, 1998). Furthermore, the focusing illusion can result in bias because it causes people to base their predictions on the transition between their current happiness and their future happiness, rather than just on their final future state of happiness (Kahneman, 2000). However, there is evidence that the focusing illusion is not a universal explanation for biased judgments and instead is a cultural phenomenon. Studies demonstrating the illusion have mostly been conducted on *individualist* cultures but studies conducted on *collectivist* cultures have not shown the effect (Lam, Buehler, McFarland, Ross, & Cheung, 2005), suggesting that collectivist cultures spontaneously focus less attention on the impact of the target event when making predictions than individualist cultures.

Wilson et al. (2000) proposed that a remedy to the focusing illusion would be to draw people's attention away from the focal event by drawing their attention to other events, which should result in more realistic forecasts. They asked college football fans to predict what they thought their happiness would be immediately after an upcoming football game and on subsequent days. Half of the respondents took part in a *defocusing* exercise before making these predictions where they were asked to complete a prospective diary where they indicated how much time they would spend on various events in the days following the football game. Wilson et al. (2000) found that respondents who completed the diary made less extreme predictions than those in the control condition and it was concluded that the diary had stopped respondents from focusing on just the impact of the target event, enabling them to make more accurate predictions.

A further proposed cause of the impact bias is that of *unforeseen adaptation*: when making their predictions people do not take into account that they will adapt to the impact of the future event. People fail to appreciate that in order to diminish the emotional impact of an event, people use different mechanisms to stop them from feeling too happy or sad for too long and return to their baseline happiness level. Some of these mechanisms are voluntary, such as finding alternate means of happiness like new friends or hobbies (Loewenstein & Frederick, 1997); and some are involuntary mechanisms, such as our psychological immune system which defends against challenges to our emotional well-being (Wilson & Gilbert, 2005). Failure to appreciate the effects of these mechanisms results in overestimating the impact of events.

Gilbert (2006) proposed that inaccurate affective forecasts were caused by the failings of imagination, and therefore imagination must be disregarded in order for the bias to be overcome. As an alternative to imagination, he proposed that predictions should be based on the actual feelings of people currently experiencing the event – referred to as *surrogation*. When imagination is denied the event information required to make a prediction, and instead people are given information about the feelings of others, this results in more accurate forecasts. Women predicting their enjoyment of a speed-date with a man made more accurate judgments when provided with the enjoyment ratings of another woman who had been on that date (surrogate information), than when provided with profile information and a photograph of the man (event information) (Gilbert, Killingsworth, Eyre, & Wilson, 2009). This was despite respondents predicting that receiving event information would lead them to make more accurate forecasts than receiving surrogate information.

1.5 Causes of Bias in Judged Impact of Health States

Which of these different accounts can best explain the impact bias shown in judgments as to the impact of health states? Most of the research examining causes of inaccurate predictions as to the impact of health states has focused on the roles of the focusing illusion and unforeseen adaptation. Ubel et al. (2001) examined the role of the focusing illusion and attempted to defocus the predicted impact of paraplegia, below-the-knee amputation, and partial blindness by asking respondents to judge the impact on various life domains before and after predicting their QOL. Contrary to expectations and inconsistent with Wilson et al.'s (2000) findings for the outcome of a football game, Ubel et al. (2001) found that QOL predictions actually became *more* extreme

after the defocusing exercise. Considering the impact on life domains had refocused rather than defocused predictions and the authors concluded that the focusing illusion was not the cause of inaccurate predictions for the impact of health states. Further studies using different defocusing exercises similarly did not find evidence supporting the role of the focusing illusion as a cause of the impact bias shown for health states (Baron et al., 2003; Ubel, Loewenstein, & Jepson, 2005). However, Ayton, Pott, and Elwakili (2007) were able to successfully defocus for the impact of HIV by getting respondents to consider a day-in-the-life of someone HIV positive before making their predictions. This finding has resulted in some contradiction in the research as to whether the focusing illusion can explain the impact bias shown for health states.

Could unforeseen adaptation explain the impact bias shown for health states? People living with health states often find ways to cope and adapt to any changes they may have to make. Riis et al. (2005) found that healthy respondents failed to take into account this adaptation when predicting the well-being of people living with a health state. Giving healthy respondents an adaptation exercise where they were encouraged to think about their own ability to adapt to situations, increased the value they gave to pre-existing and newly diagnosed paraplegia in a person trade-off method (Damschroder, Zikmund-Fisher, & Ubel, 2005). Similarly getting respondents to predict how their experience of life with a health state would change over time before predicting the impact of the health state has also been shown to reduce the extremeness of predictions (Ubel et al., 2005). This led Ubel and colleagues to conclude that unforeseen adaptation was a more compelling contributor than the focusing illusion to extreme affective forecasts as to the impact of health states.

A further proposed contributor to the impact bias shown for health states could be that any difference in QOL predictions between those living and not living with a health state could be due to *scale recalibration*. There is evidence that people interpret the response scale endpoints in reference to a comparison group of people their own age (Ubel, Jankovic, Smith, Langa & Fagerlin, 2005). Although this was found to explain some of the disparity in QOL judgments by different groups of people, it did not explain the difference in the judgments of people living and not living with a health state. Furthermore, Lacey et al. (2008) compared the QOL predictions of patients with emphysema (a lung disease) and the predictions of a healthy sample as to the impact of a range of health states (e.g. Diabetes) and non-health states (e.g. having a nasty boss). Both groups also made QOL predictions as to the impact of a chronic lung disease. The results revealed that patients provided less extreme QOL predictions for the chronic lung disease than the healthy sample, but there were no differences between the two groups for any of the other health states and non-health states. Lacey et al. (2008) concluded that if scale recalibration had been the basis for the difference, then different predictions by patients and the healthy sample would have been observed for all the predicted states. However, as the only difference was for predictions as to the impact of a chronic lung disease, then scale recalibration could not account for the disability paradox.

Some of the disparity between the predictions of people living and not living with health states could be explained by the focus of their judgments being either self happiness or others' happiness. Typically, the accuracy of predictions is determined by the other-happiness predictions of a healthy sample being compared to the self-

happiness ratings of people living with the health state (Riis et al., 2005; Sackett & Torrance, 1978). Therefore the viewpoint of the judgments is confounded with whether or not the person is living with the health state. A potential problem with comparing these judgments is that people consider themselves different to others (Kruger, 1999). Therefore if the healthy sample believes that they would be able to cope better than others, then this would lead them to overestimate the impact of the health state on others' happiness. Consistent with this Igou (2008) found that people predicted a longer-lasting negative impact for others than for themselves, presumably because they had more knowledge about their own coping strategies than they did for other people. Baron et al. (2003) attempted to examine this confound between self/other predictions and whether or not the respondent was living with a health state, and their results suggested that the impact bias may be partly due to this confound, with respondents making more extreme other predictions than self predictions.

1.6 Summary and Thesis Aims

In summary, the literature clearly shows extensive evidence for a disparity in the judged impact of health states on emotional well-being between those living and not living with a health state. This follows-on from a well-documented inclination for people to show an overestimation in their judgments as to the impact of a whole range of events. However, although many explanations for this bias in judgment have been proposed and demonstrated, there is a lack of clarity in the domain of health states as to which of these proposals can explain the bias in the perceived impact of health states. Determining the cause of bias in the judgments of people not living with a health state and developing potential ways of eradicating it, is important in reducing the disparity

and aligning the views of people living and not living with health states as to the impact. The ability to enable a healthy sample to more accurately envisage what life would be like with a health state has clear implications for both health care policy as well as general decision making.

Following on from this, the first main aim of this thesis is to provide further knowledge and assessment of the impact bias for health states, by examining judgments as to the impact of a variety of chronic health states (chapter 3). Initially, the thesis aims to examine the extent of the bias by comparing the predictions of a healthy sample with the ratings of people actually living with the health state, so that the accuracy of predictions can be determined. Subsequently, with the intention of providing insight into whether patients' views instead of non-patients' views should be used in health care policy decisions, the predictions of people living with one health state as to the impact of other health states are also measured. This is to determine whether living with one health state provides a more realistic insight into what life is like with another health state, and ultimately whose ratings should be used in resource planning.

The second main aim is to investigate causes of the overestimation in predictions. As there is a lack of clarity within the existing research as to a clear explanation for the impact bias for health states, an aim of this thesis is to examine and test the contribution of different proposals as explanations for the impact bias. Initially, the role of the confound between judgment viewpoint (self/other) and whether or not the person is living with the health state is examined (chapter 3). This is achieved by asking people living and not living with health states to judge the impact of health

states on both their own and other peoples' happiness. Although Baron et al. (2003) attempted to explore this confound as an explanation for the impact bias, the analyses of their results were unclear as to the different judgments of the healthy sample and people living with the health state. This thesis clearly unpacks this confound and separately examines whether the self/other judgments differ between the two respondent groups.

Subsequently, the thesis examines the role of the focusing illusion and draws conclusions as to whether this explanation can account for the impact bias for health states (chapters 3 & 4). The existing literature has been inconsistent in its conclusions as to the contribution of this illusion, with some researchers concluding that the illusion can not explain the bias for health states (Ubel et al., 2005) whereas others claim that it can (Ayton et al., 2007). As the role of this illusion has previously been determined by the degree of success at defocusing predictions using different methods, this thesis continues with this approach by exploring whether different defocusing methods can moderate judgments. Existing defocusing methods used by Wilson et al. (2000), Ubel et al. (2001) and Ubel et al. (2005) are tested, and a new defocusing method is developed and tested.

Additionally, this thesis will examine whether peoples' tendency to think of an extreme case when predicting the impact of an event contributes to biased predictions (chapter 5). Morewedge et al. (2005) found that people based their affective forecasts on extreme instances when predicting for a familiar event, this thesis will explore whether this occurs when predicting for a novel event. More importantly, this thesis

will examine whether informing people about distributions of judgments can moderate their predictions.

From these explorations into probable causes of the impact bias for health states, the aim is to not just to draw conclusions regarding the causes of the bias, but also to suggest practical methods for improving the accuracy of predictions, which could be used outside of the laboratory by people contemplating the impact of a health state. Consistent with this, the final main aim of this thesis is to examine Gilbert's (2006) proposal that people should base their judgments on the ratings of others in order to make accurate forecasts (chapter 6). He suggested that for this to happen information about the event should be withheld and replaced with other peoples' ratings. This thesis examines the value of this proposal in situations where event information can not be easily withheld.

The work within this thesis is submitted in the form of "stand-alone" publishable papers (chapters 3 to 6), which each have their own overview of the literature relevant to that chapter and reference list.

1.7 Chapter Overviews

This thesis involves people making judgments of actual and predicted happiness and quality of life. As there are many different definitions of happiness – such as well-being, life satisfaction - chapter 2 provides clarification as to the intended meaning of these terms in the subsequent chapters. A discussion is also given about the different scales which can be used to measure happiness, and an explanation is provided for why the single-item measurement method used throughout this thesis was chosen.

The aim of chapter 3 was to explore whether the impact bias shown for a variety of health states could be accounted for by the confound in previous literature (e.g. Riis et al., 2005; Sackett & Torrance, 1978) between the viewpoint of judgments (self/other) and whether the respondent is living or not living with a health state. In this chapter, the judgments of people not living with a health state and respondents living with either asthma, diabetes, epilepsy, haemophilia, or kidney disease were solicited, and both groups rated/predicted the impact on their own happiness and on other people's happiness. The bias in their self/other judgments was explored, and additionally it was examined whether people living with one health state made more accurate forecasts than the healthy sample as to the impact of other health states. Furthermore, the role of the focusing illusion as a cause of the bias in predictions was examined by exploring two defocusing methods designed to improve the accuracy of predictions (versions of Wilson et al.'s (2000) diary defocusing method and Ubel et al.'s (2001) life domain defocusing method). Finally, it was examined whether people living with a health state would be willing to hypothetically swap their health state for another health state, in order to provide another measure of how they viewed their own health state. A version of this paper has been published in *Medical Decision Making* (Walsh & Ayton, 2009).

Chapter 4 continued to examine the focusing illusion as an explanation for the bias in judgments but developed and tested a new defocusing method designed to encourage respondents to think more about the emotional impact of an event before making a prediction as to the overall impact. This involved getting respondents to predict the impact on various feelings before rating the overall affective impact. In 3

studies, respondents predicted the impact on their own happiness/QOL of living with multiple sclerosis for at least one year or having won the lottery a year previously. The chapter also explored whether measuring happiness/QOL using a rating scale which encouraged respondents to consider the degree of change in their well-being between now and the predicted state, would also have a moderating effect on their predictions. Finally, a fourth study examined whether a version of the unsuccessful life domain defocusing method used by Ubel et al. (2005) could be improved if used in conjunction with a scale which considered change. A version of this paper is currently under journal review (Walsh & Ayton, submitted).

The aim of chapter 5 was to examine whether peoples' tendency to base their predictions as to the impact of a familiar event on a recalled extreme instance, as shown by Morewedge et al. (2005), could also explain the bias shown in predictions for the impact of a health state because people were basing their judgments on an extreme case. It was examined whether a proposed solution to this problem could be to encourage people to think about the wider range of well-being of people living with that health state, by informing respondents about potential distributions of judgments, before they made their judgments as to the impact. Respondents predicting the happiness of people living with Crohn's disease, multiple sclerosis, Parkinson's disease, and people similar in age and background to themselves, received a tutorial on sample distributions in a non-health-state related scenario in order to see if this modified their predictions.

Chapter 6 examined Gilbert's (2006) suggestion that peoples' affective forecasts could be improved by disregarding imagination and basing judgments on the

reports of people currently experiencing the event (surrogates). As it is highly unlikely that outside of the laboratory someone contemplating the impact of a health state could be informed about surrogate' happiness without information about the health state also being revealed, this chapter examined whether people would use both types of information. The aim of the 5 studies within this chapter was to examine whether using surrogate information resulted in less extreme predictions as to the impact of kidney disease, and more importantly, whether providing surrogate information alongside information about the health state resulted in more accurate predictions. A version of this paper has been accepted in *Journal of Experimental Psychology: Applied* (Walsh & Ayton, in press).

Finally, chapter 7 provides a summary of the findings of this research and discusses how this thesis contributes to our understanding of the impact bias shown in judgments as to well-being with health states, the explanations and potential remedies for this bias, and the implications for health care policy. Potential directions for future research are also considered and discussed.

1.8 References

Albrecht, G. L., & Devlieger, P. J. (1999). The disability paradox: High quality of life against all odds. *Social Science & Medicine. 48*, 977-988.

Ayton, P., Pott, A., & Elwakili, N. (2007). Affective forecasting: Why can't people predict their emotions? *Thinking and Reasoning. 13*, 62–80.

Baron, J., Asch, D. A., Fagerlin, A., Jepson, C., Loewenstein, G., Riis, J., et al. (2003). Effect of assessment method on the discrepancy between judgments of health disorders people have and do not have: A web study. *Medical Decision Making. 23*, 422-434.

Boyd, N. F., Sutherland, H. J., Heasman, K. Z., Tritchler, D. L., & Cummings, B. J. (1990). Whose utilities for decision analysis? *Medical Decision Making. 10*, 58-67.

Brickman, P., Coates, D., & Janoff-Bulman, R. (1978). Lottery winners and accident victims: Is happiness relative? *Journal of Personality & Social Psychology. 36*, 917-927.

Buehler, R., & McFarland, C. (2001). Intensity bias in affective forecasting: The role of temporal focus. *Personality & Social Psychology Bulletin. 11*, 1480-1493.

Chapman, G. B., & Coups, E. J. (2006). Emotions and preventive health behavior: Worry, regret, and influenza vaccination. *Health Psychology. 25*, 82-90.

Damschroder, L. J., Zikmund-Fisher, B. J., & Ubel, P. A. (2005). The impact of considering adaptation in health state valuation. *Social Science & Medicine. 61*, 267-277.

Dolan, P., & Kahneman, D. (2008). Interpretations of utility and their implications for the valuation of health. *The Economic Journal. 118*, 215-234.

Dunning, D., Griffin, D.W., Milojkovic, J., & Ross, L. (1990). The overconfidence effect in social prediction. *Journal of Personality and Social Psychology, 58,* 568-581.

Gilbert, D. T. (2006). *Stumbling on Happiness*. London: Harper Press.

Gilbert, D. T., Driver-Linn, E., & Wilson, T. D. (2002). The trouble with Vronsky: Impact bias in the forecasting of future affective states. In P. Salovey, & L. Feldman-Barrett (Eds.), *The wisdom of feeling* (pp. 144-166). New York: Guilford.

Gilbert, D. T., Killingsworth, M. A., Eyre, R. N., & Wilson, T. D. (2009). The surprising power of neighborly advice. *Science. 323*, 1617-1619.

Gilbert, D. T., Pinel, E. C., Wilson, T. D., Blumberg, S. L., & Wheatley, T. P. (1998). Immune neglect: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology. 75*, 617-638.

Griffin, D. W., & Ross, L. (1991). Subjective construal, social inference, and human misunderstanding. In M. Zanna. *Advances in experimental social psychology* (Vol. 24, pp. 319-356). New York: Academic Press.

Hurst, N. P., Jobanputra, P., Hunter, M., Lambert, M., Lochhead, A., & Brown, H. (1994). Validity of EuroQol – a generic health status instrument – in patients with Rheumatoid Arthritis. *British Journal of Rheumatology. (33)*, 655-662.

Igou, E. R. (2008). “How long will I suffer?” versus “how long will you suffer?” A self-other effect in affective forecasting. *Journal of Personality & Social Psychology. 95,* 899-917.

Kahneman, D. (2000). Evaluation by moments: Past and future. In D. Kahneman & A. Tversky (Eds.), *Choice, values, and frames* (pp.693-708). New York: Cambridge University Press.

Kermer, D.A., Driver-Linn, E., Wilson, T.D., & Gilbert, D.T. (2006). Loss aversion is an affective forecasting error. *Psychological Science. 17,* 649-653.

Kruger, J. (1999). Lake Wobegon by gone! The “below-average effect” and the egocentric nature of comparative ability judgments. *Journal of Personality & Social Psychology. 77*, 221-232.

Lacey, H. P., Fagerlin, A., Loewenstein, G., Smith, D. M., Riis, J., & Ubel, P. A. (2008). Are they really that happy? Exploring scale recalibration in estimates of well-being. *Health Psychology. 27 (6),* 669-675.

Lam, K. C. H., Buehler, R., McFarland, C., Ross, M., & Cheung, I. (2005). Cultural differences in affective forecasting: The role of focalism. *Personality & Social Psychology Bulletin. 9,* 1296-1309.

Levine, L. J., & Safer, M. A. (2002). Sources of bias in memory for emotions. *Current Directions in Psychological Science. 11*, 169-173.

Loewenstein, G., & Frederick, S. (1997). Predicting reactions to environmental change. In M. Bazerman, D. Messick, A. Tenbrunsel, & K. Wade-Benzoni (Eds.), *Environment, ethics, and behavior* (pp. 52–72). San Francisco: New Lexington Press.

Mellers, B. A., & McGraw, A. P. (2001). Anticipated emotions as guides to choice. *Current Directions in Psychological Science. 10*, 210-214.

Morewedge, C. K., Gilbert, D. T., & Wilson, T. D. (2005). The least likely of times: How remembering the past biases forecasts of the future. *Psychological Science. 16(8)*, 626-630.

NICE (2004). Guide to the methods of technology appraisal. *National Institute of Clinical Excellence.* Available at: http://www.nice.org.uk/niceMedia/pdf/TAP_Methods.pdf (accessed 11 February 2009).

Riis, J., Loewenstein, G., Baron, J., Jepson, C., Fagerlin, A., & Ubel, P. A. (2005). Ignorance of hedonic adaptation to hemodialysis: A study using ecological momentary assessment. *Journal of Experimental Psychology: General. 134*, 3-9.

Sackett, D. L., & Torrance, G. W. (1978). The utility of different health states as perceived by the general public. *Journal of Chronic Diseases. 31*, 697-704.

Schkade, D. A., & Kahneman, D. (1998). Does living in California make people happy? A focusing illusion in judgments of life satisfaction. *Psychological Science. 9*, 340-346.

Schulz, R., & Decker, S. (1985). Long-term adjustment to physical disability: The role of social support, perceived control, and self-blame. *Journal of Personality & Social Psychology. 48*, 1162-1172.

Sieff, E. M., Dawes, R. M., & Loewenstein, G. (1999). Anticipated versus actual reaction to HIV test results. *American Journal of Psychology. 112*, 297-311.

Smith, D. M., Sherriff, R. L., Damschroder, L., Loewenstein, G., & Ubel, P. A. (2006). Misremembering colostomies: Former patients give lower utility ratings than do current patients. *Health Psychology. 25*, 688-695.

Ubel, P. A., Jankovic, A., Smith, D., Langa, K. M., & Fagerlin, A. (2005). What is perfect health to an 85-year-old?: Evidence for scale recalibration in subjective health ratings. *Medical Care. 43*, 1054-1057.

Ubel, P. A., Loewenstein, G., Hershey, J., Baron, J., Mohr, T., Asch, D. A., & Jepson, C. (2001). Do nonpatients underestimate the quality of life associated with chronic health conditions because of a focusing illusion? *Medical Decision Making. 21*, 190-199.

Ubel, P. A., Loewenstein, G., & Jepson, C. (2005). Disability and sunshine: Can hedonic predictions be improved by drawing attention to focusing illusions or emotional adaptation? *Journal of Experimental Psychology: Applied. 11*, 111-123.

Walsh, E., & Ayton, P. (2009). What would it be like for me and for you? Judged impact of chronic health conditions on happiness. *Medical Decision Making.* 29, 15-22.

Walsh, E., & Ayton, P. (in press). My imagination vs. your feelings: Can personal affective forecasts be improved by knowing other peoples' emotions? *Journal of Experimental Psychology: Applied.*

Walsh, E., & Ayton, P. (submitted). Health, wealth, and happiness: Is the focusing illusion responsible for biased affective forecasts. Unpublished manuscript.

Wilson, T. D. & Gilbert, D. T. (2005). Affective forecasting: Knowing what to want. *Current Directions in Psychological Science, 14, 131-134.*

Wilson, T. D., Meyers, J., & Gilbert, D. T. (2003). "How happy was I anyway?" A retrospective impact bias. *Social Cognition. 21*, 421-446.

Wilson, T. D., Wheatley, T., Meyers, J. M., Gilbert, D. T., & Axsom, D. (2000). Focalism: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology. 78*, 821-836.

Wirtz, D., Kruger, J., Scollon, C. N., & Diener, E. (2003). What to do on spring break? The role of predicted, on-line, and remembered experience in future choice. *Psychological Science. 14(5),* 520-524.

Chapter 2: What is Happiness and How is it Measured?

"Personal happiness is generally held to be the most important goal in life" (Fordyce, 1988, p355). Indeed, amongst US residents there is a widely held view that *personal happiness* is important (Diener, Suh, Smith, & Shao, 1995) and many people believe that happiness is something which can be continuously improved on throughout life (Sheldon & Houser-Marko, 2001). Despite the value of happiness being recognised, there is not a main consensus about what exactly *is* personal happiness. The term *happiness* can be interpreted in many ways and peoples' understanding of the term can differ. Some people might interpret happiness to be their general well-being whereas others might interpret happiness in relation to a specific aspect of their life e.g. health. Then there are a range of components (e.g. optimism) which can make-up different concepts of happiness, and finally there are many different terms, e.g. life satisfaction, well-being, which are used interchangeably with happiness. For these reasons, as this thesis is concerned with not only measuring happiness but also comparing different groups of peoples' actual and predicted happiness ratings, it is important to define what is meant by happiness in the subsequent studies.

2.1 Definitions of Happiness

In the past fifty years, an explosion of research into the degree and cause of happiness has taken place, and scientists have become interested in measuring, comparing, and understanding differences in the happiness of different cultures, countries, and communities. Indeed, between 2001 and 2005 more than 100 articles were published on life satisfaction and happiness (Kahneman & Krueger, 2006). This process of investigating happiness has led to clarification being required as to what exactly is meant by the term, and researchers have developed some specific definitions

in order to assist with the measurement. According to Diener (1984) there are three main definitions of happiness: firstly, there is a normative definition which suggests that rather than being subjective, a person's happiness is a desirable state which is judged against the value framework of an observer or a normative standard. Gilbert (2006) refers to this as *moral happiness* and defines it as a state we should want to achieve if we have lived a virtuous life. This definition of happiness has often been the subject of philosophical debate.

Then there are two subjective definitions of happiness which Diener (1984) notes are both related with often an unclear distinction between the two, but are more often than not the focus of social scientists. The first definition is concerned with happiness as a gauge of how positively a person evaluates their life. This type of happiness has been defined as "a global assessment of a person's quality of life according to his own chosen criteria" (Shin & Johnson, 1978, p. 543), and is often measured as *life satisfaction*. According to this definition, happiness is a concept which a person is capable of evaluating themselves and that each person individually determines which criteria should be used in order to provide this judgment (Diener, 1984). The second subjective definition of happiness is related more with positive versus negative affect, and focuses on positive emotional occurrences. It is the amount of positive affect a person feels they experience or are predisposed to experience at a particular time in their life (Diener, 1984).

Gilbert (2006) also proposes two subjective definitions of happiness but suggests alternate interpretations for them. Firstly he suggests that there is *emotional happiness* which refers to the feeling or subjective state we experience. This concept is

hard to define because it has no objective attribute but is the type of happiness that people are motivated to achieve, and it is the pursuit of this type of happiness which underlies most of our choices and decisions. Secondly he suggests that there is *judgmental happiness* which is when a person uses the word happy followed by "about" or "that" to express his opinion about the value of something. The actual feeling does not need to be experienced, rather people are stating that they are aware that something could cause a positive feeling. Again, these two definitions can overlap which Gilbert (2006) remarks can contribute to many people often (wrongly) assuming that if someone expresses judgmental happiness then they must also be emotionally happy.

This thesis is concerned with peoples' subjective ratings and predictions of their own and other peoples' happiness. Respondents are asked to self-report their current happiness and to make predictions as to what they think other peoples' happiness or their own future happiness would be. Therefore within the subsequent studies the term happiness should be interpreted consistent with Diener's (1984) first subjective definition that it is a measure of how positively a person evaluates their – or someone else's – life, determined by each person's individual criteria. This is the most appropriate definition for the nature of the studies within this thesis because this type of happiness depends on self-reports (which are the basis of the subsequent studies) and therefore it is important that happiness is identified from the point of view of each individual person. In this sense, *happiness* denotes the extent to which people judge their or other peoples' overall well-being positively.

Aside from having multiple definitions, there are also many different terms used to express the concept of happiness. These have ranged from subjective well-being, to life satisfaction, to perceived life quality. Generally, what all these terms have in common is that they provide an overall measure of a person's well-being (Andrews & Robinson, 1991). Affective forecasting studies exploring the reasons for the perceived bias as to the impact of general events e.g. the outcome of a football game, have typically asked respondents to judge happiness (Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000). On the other hand, studies investigating specifically the impact of health states have asked respondents to judge *quality of life* (QOL) (Ubel et al., 2001). As the focus in the subsequent studies are the causes of biased affective forecasts but mainly examined in relation to the impact of health states, either happiness or QOL have been measured. Therefore throughout the thesis, the terms happiness, life satisfaction, QOL, and well-being are considered to be similar, related, and are used interchangeably, and no distinction is intended between them unless explicitly stated.

2.2 Comparison of Happiness Judgments

How can we be sure that when comparing happiness judgments, such as in chapter 3 where a comparison of the happiness of people living and not living with health states is made, that one respondent's happiness is the same as the next respondent's happiness? It is entirely possible that when one person says they're very happy, another person might conclude that the first person only *thought* that they were really happy, whereas in their view that person was only moderately happy. Unfortunately, as there is no perfectly reliable and valid measure of happiness, it is not

possible for one person to accurately measure the components of someone else's subjective feelings and compare to the components which make up their personal subjective experience (Gilbert, 2006). When comparing two people's happiness judgments an element of error will always be part of the equation, especially in studies such as those in this thesis where different groups of peoples' actual and predicted happiness judgments are being compared. Gilbert (2006), however, suggests that the effects of this error can be reduced: firstly if the notion is accepted that a person's rating of their current happiness is their best estimate of their current subjective experience and that this is our best observation of that person's happiness; and secondly that any error within judgments diminishes over a large sample of people.

2.3 Measuring Well-being

If a perfectly reliable and valid measure of subjective experience is yet to exist, how do we measure a person's judgment of their global well-being? A person's physiological happiness can be measured via their brain activity (Urry et al. 2004), but when asking respondents to make judgments of happiness, one of the simplest methods is through self-rated rating scales; either via multi-item scales or through single-item scales. Multi-item scales consist of several items which measure various dimensions of happiness. The Satisfaction with Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985) is one such scale which has been extensively tested and used. It consists of 5-items that respondents rate on a 7-point scale ranging from *strongly disagree* to *strongly agree* which provide an assessment of a respondent's overall judgment of their life satisfaction. A further such scale is the PSYCHAP Inventory (Fordyce, 1986) which consists of 320 items over 4 forms. A total happiness score can be calculated as

well as scores on 4 subscales which reflect different attributes of happiness: achieved happiness, happy personality, happy attitudes and values, and happiness life-style. Overall, multi-item scales of happiness are considered to have greater reliability and validity than single-item scales, and have the advantage of representing a larger variety of the components which make up a person's well-being (Andrews & Robinson, 1991).

Single-item scales are also used to provide an assessment of a respondent's global well-being, but do so via a single question. The Gallup Organisation uses such a single-item scale which asks "in general, how happy would you say you are – very happy, fairly happy, or not happy". Likewise, the University of Michigan's Survey Research Center asks "taking all things together, how would you say things are these days – would you say that you're very happy, pretty happy, or not too happy these days" (Andrews & Robinson, 1991). These types of single-item questions are often used by research organisations conducting large scale surveys such as the General Social Survey (GSS), as respondents find this type of question easy to answer. In 1998, only 1% of respondents in the GSS were unable or unwilling to answer the single-item happiness question, compared to 17% who refused to provide information on their income (Kahneman & Krueger, 2006). On the whole, it has been found that single-item scales are more widely used than multi-item scales when measuring happiness (Andrews & Robinson, 1991), and have the advantage of being succinct (Diener, 1984) and easy to use. Furthermore "the validity and reliability of these [single-item] scales suggest that they are adequate if a very brief measure of global well-being is required" (Diener, 1984, p544).

For these reasons, affective forecasting studies have typically used a single-item scale to measure a global feeling of well-being (Dunn, Wilson, & Gilbert, 2003; Gilbert, Pinel, Wilson, Blumberg, Wheatley, 1998; Wilson, Meyers, & Gilbert, 2001; Wilson et al., 2000). For example, respondents indicate their general happiness in response to a question such as "in general, how happy would you say you are these days" using a 7-point (e.g. Dunn et al., 2003; Gilbert et al., 1998) or 9-point (Wilson et al., 2000) scale with the endpoints *not happy* and *very happy*. This method of measuring happiness is considered to be very similar to the single-item scale used by the Gallup Organisation, and has been found to correlate highly with items from Diener et al.'s (1985) SWLS, and Kammann and Flett's (1983) Affectometer 2 (Gilbert et al., 1998).

Similarly, QOL has been measured using both single-item and multi-item scales. The single-item scales have been found to be almost as effective at measuring QOL as multi-item scales but have the added advantage of being straightforward to use and, of particular importance when measuring a clinical population, are more cost-effective (McDowell, 2006). Consistent with affective forecasting studies exploring happiness, those studies measuring actual and expected QOL with health states have usually also used a single-item scale. Respondents are typically asked to rate their actual and expected QOL on a 0-100 scale ranging from (*condition) as bad as death/ worst imaginable QOL* to *perfect health/best imaginable QOL* (Lacey et al., 2006; Smith, Sherriff, Damschroder, Loewenstein, & Ubel, 2006; Ubel et al., 2001).

The studies within this thesis also use single-item measurement methods of happiness and QOL because they are succinct, easy for the respondent to use, and have

been used successfully in previous research into affective forecasting. In all of the subsequent studies, respondents were able to provide a rating in response to a single-item question, suggesting that a single-item measure was appropriate and efficient for the purposes of these types of studies.

2.4 References

Andrews, E M., & Robinson, J. P. (1991). Measures of subjective wellbeing. In J. P. Robinson, P.R. Shaver, & L. S. Wrightsman (Eds.), *Measures of Personality and Social Psychological Attitudes* (pp. 61-114). London, UK: Academic Press.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95,* 542-575.

Diener, E., Emmons, R.A., Larsen, R.J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment, 49,* 71-75.

Diener, E., Suh, E. M., Smith, H., & Shao, L. (1995). National differences in reported well-being: Why do they occur? Cited in Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology. 9*, 111-131.

Dunn, E. W., Wilson, T. D., & Gilbert, D. T. (2003). Location, location, location: The misprediction of satisfaction in housing lotteries. *Personality & Social Psychology Bulletin. 29,* 1421-1432.

Fordyce, M. W. (1986). Cited in Andrews, E M., & Robinson, J. P. (1991). Measures of subjective wellbeing. In J. P. Robinson, P.R. Shaver, & L. S. Wrightsman (Eds.), *Measures of Personality and Social Psychological Attitudes* (pp. 61-114). London, UK: Academic Press.

Fordyce, M. W. (1988). A review of research on the happiness measures: A sixty second index of happiness and mental health. *Social Indicators Research, 20,* 355-381.

Gilbert, D. T. (2006). *Stumbling on Happiness.* London, UK: Harper Press.

Gilbert, D. T., Pinel, E. C., Wilson, T. D., Blumberg, S. L., & Wheatley, T. P. (1998). Immune neglect: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology. 75*, 617-638.

Kahneman, D., & Krueger, A. B. (2006). Developments in the measurement of subjective well-being. *Journal of Economic Perspectives. 20*, 3-24.

Kammann, R., & Flea, R. (1983). Cited in Gilbert, D. T., Pinel, E. C., Wilson, T. D., Blumberg, S. L., & Wheatley, T. P. (1998). Immune neglect: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology. 75*, 617-638.

Lacey, H. P., Fagerlin, A., Loewenstein, G., Smith, D. M., Riis, J., & Ubel, P. A. (2006). It must be awful for them: Perspective and task context affects ratings for health conditions. *Judgment and Decision Making. 1*, 146-152.

McDowell, I. (2006). *Measuring Health: A Guide to Rating Scales and Questionnaires.* New York, USA: Oxford University Press.

Sheldon, K. M., & Houser-Marko, L. (2001). Self-concordance, goal attainment, and the pursuit of happiness: Can there by an upward spiral? *Journal of Personality & Social Psychology. 80*, 152-165.

Shin, D. C., & Johnson, D. M. (1978). Cited in Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95*, 542-575.

Smith, D. M., Sherriff, R. L., Damschroder, L., Loewenstein, G., & Ubel, P. A. (2006). Misremembering colostomies: Former patients give lower utility ratings than do current patients. *Health Psychology. 25*, 688-695.

Ubel, P. A., Loewenstein, G., Hershey, J., Baron, J., Mohr, T., Asch, D. A., & Jepson, C. (2001). Do nonpatients underestimate the quality of life associated with chronic health conditions because of a focusing illusion? *Medical Decision Making. 21*, 190-199.

Urry, H. L., Nitschke, J. B., Dolski, I., Jackson, D. C., Dalton, K. M., Mueller, C. J., et al. (2004). Making a life worth living. Neural correlates of well-being. *Psychological Science. 15*, 367-372.

Wilson, T. D., Meyers, J. M., & Gilbert, D. T. (2001). Lessons from the past: Do people learn from experience that emotional reactions are short-lived? *Personality & Social Psychology Bulletin. 27*, 1648-1661.

Wilson, T. D., Wheatley, T., Meyers, J. M., Gilbert, D. T., & Axsom, D. (2000). Focalism: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology. 78*, 821-836.

Chapter 3: What Would it be Like for Me and for You?

Judged Impact of Chronic Health Conditions on Happiness

Running title: IMPACT OF CHRONIC HEALTH CONDITIONS ON HAPPINESS

What Would it be Like for Me and for You? Judged Impact of Chronic Health Conditions on Happiness.

Emma Walsh & Peter Ayton

City University, London UK

Emma Walsh & Peter Ayton, Department of Psychology, City University.

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Correspondence concerning this article should be address to Emma Walsh, City University – Department of Psychology, Northampton Square, London, EC1V 0HB, UK. Email: e.l.walsh@city.ac.uk

3.7 Appendix

Health State Descriptions

Asthma Description

Asthma is a condition which affects a person's breathing. It affects 1 in 13 adults in the UK, and approximately 1500 people die from asthma each year. When an asthmatic comes into contact with something which irritates their airways (a trigger), their airways narrow, making it harder for them to breath. Common triggers are animals, cigarette smoke and exercise, and it is important for asthmatics to avoid their triggers as much as possible. Treatments in the form of sprays are available to help control the symptoms.

Diabetes Description

Diabetes is a condition where the amount of sugar in the blood is too high. 1.8 million people have diabetes in the UK. There are two types of diabetes: type 1 is treated by up to 4 injections of insulin each day; type 2 is treated by diet and exercise, although sometimes medication and insulin injections are required as well. Diabetics must maintain a healthy diet and exercise plan in order to keep their sugar levels at a normal level.

Epilepsy Description

Epilepsy is a condition where a person is prone to recurrent seizures, where they may black out or experience unusual movements or sensations. 1 in 133 people in

the UK are living with epilepsy and their seizures are controlled by taking daily medication. A person's seizures can be triggered by a variety of factors such as alcohol or patterns of light, and therefore it is important that they try to avoid their triggers. People living with epilepsy are not allowed to drive a car until they have been free from seizures for a year.

Haemophilia Description

Haemophilia is an inherited genetic blood condition where an essential clotting factor is missing, causing a person with haemophilia to bleed for longer than normal. Around 6000 people are living with haemophilia in the UK. Small cuts and grazes can be treated with pressure but the main problem is internal bleeding, with severe haemophiliacs suffering from spontaneous internal bleeding. Treatment is in the form of an injection of the missing clotting factor, up to 3 times a week.

Kidney Disease Description

Kidney disease is a term used to describe any abnormalities in the kidneys. 1 in 8 of the population has kidney disease, and 1 in 10 of these people will go on to develop kidney failure, requiring dialysis or a kidney transplant. Dialysis is the removable of waste products and water from the blood either by a machine in hospital which needs to be carried out 2-3 days a week for 3-5 hours each time, or by the person at home which needs to be carried out every day for 1-2 hours.

Chapter 4: Health, Wealth and Happiness: Is the Focusing Illusion Responsible for Biased Affective Forecasts?

Health, Wealth and Happiness: Is the Focusing Illusion Responsible for Biased Affective Forecasts?

Emma Walsh & Peter Ayton

City University, London

Emma Walsh & Peter Ayton, Department of Psychology, City University.

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Correspondence concerning this article should be address to Emma Walsh, City University – Department of Psychology, Northampton Square, London, EC1V 0HB, UK. Email: e.l.walsh@city.ac.uk

4.1 Abstract

The focusing illusion (Wilson et al. 2000) has been questioned as an explanation for biased forecasts of the impact of health states on wellbeing, because attempts to "defocus" affective forecasts by prompting people to reflect on a broad range of their activities have failed to produce consistent results. We propose a novel defocusing method which encourages people to consider the emotional impact of an event on several particular feelings before predicting the overall affective impact. In 3 studies, respondents predicted the impact of either a positive (winning money) or negative (health state) event on happiness/quality of life, before or after contemplating the impact on a list of other feelings. Predictions were less extreme when respondents had considered other feelings first, but only when using a "change" scale which required explicit evaluation of the perceived change from their current state. A fourth study using the change scale with an earlier activities-based defocusing method failed to produce less extreme predictions. Considering a more detailed emotional impact of an event is a successful defocusing method for reducing the extremeness of affective forecasts.

Key words: affective forecasting, impact bias, health state, focusing illusion, defocusing

4.2 Introduction

People display a bias when predicting their future emotions by overestimating both the intensity and duration of their emotional response to a future event (Gilbert, Driver-Linn, & Wilson, 2002). This overestimation, known as the *impact bias,* may have long-term consequences, particularly when judging the impact of events such as health states and their related treatments. Numerous studies have reported that non-patients overestimate the impact of health states resulting in a disparity between non-patients' judgments and patient's actual experiences (Boyd, Sutherland, Heasman, Tritchler, & Cummings, 1990; Hurst et al., 1994; Riis et al., 2005; Smith, Sherriff, Damschroder, Loewenstein, & Ubel, 2006). Not fully appreciating how a health state can impact on emotional states may influence not only how we treat someone living with that health state but also the treatments and associated risks we would accept if diagnosed.

There have been many suggested causes of this bias in predictions, but one of the most prominent explanations is the *focusing illusion,* which suggests that we do not pay sufficient attention to other events which will also have an impact on our emotions and focus solely on the impact of the target event (Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000). Attempts to reduce the effect of this illusion by drawing people's attention to these other events using *defocusing methods* have achieved varied amounts of success. Wilson et al. (2000) successfully defocused respondents by getting them to complete a prospective diary before considering the impact of a football game on happiness, resulting in less extreme predictions. However attempts to defocus more consequential events, such as the impact of living with a health state, have failed to

consistently result in less extreme forecasts. Aside from the successful defocusing of the impact of HIV using a day-in-the-life defocusing method (Ayton, Pott, & Elwakili, 2007), researchers have been unable to defocus respondents as to the impact of a variety of health states (Baron et al., 2003; Ubel et al., 2001; Ubel, Loewenstein, & Jepson, 2005; Walsh & Ayton, 2009). This has resulted in both the effectiveness of the defocusing methods (Walsh & Ayton, 2009) and the capability of the focusing illusion to explain the bias in predictions shown for health states, being called into question (Ubel et al., 2001, Ubel et al., 2005).

To date, all tested defocusing methods have attempted to reduce the focusing illusion by drawing attention to other events that might affect people's emotions e.g. attempts to defocus the impact of health states have asked respondents to contemplate engaging in a wide range of activities. Although these methods worked well when the target event was the outcome of a football game, the reason why they have been ineffective at defocusing the impact of health states may be because it is easy for people to envisage that, unlike football scores, health states would have an impact on a wide range of activities. Therefore drawing attention to these activities would not defocus people if they anticipate that these activities would be impacted by the health state.

We propose that another approach to facilitating a more realistic contemplation of a future with a health state – one that is not dominated by the negative impact - might be to encourage people to consider an assortment of qualitatively different emotions. This would enable them to develop a richer picture for their emotional reaction to a health state, helping them to appreciate that their general wellbeing may

not be as affected as they might first surmise. The perceived impact of an event on different feelings has not been explored in studies of affective forecasting; typically, respondents are asked to imagine a scenario (e.g. their candidate winning an election, getting a grade lower than expected on exams, being diagnosed with a health state) and then asked to predict a general affective response (e.g. happiness, quality of life (QOL)) at a certain timepoint in the future. We propose that a defocusing method which draws attention to an array of other feelings may attenuate the bias in predictions because it may emphasise feelings which may or may not be affected by the event, and thereby reduce perceived impact on their general feeling of wellbeing.

We further propose another contributor to the bias in affective forecasts to be the scale in which respondents are asked to rate their feelings. Research exploring happiness has tended to use either a 1-7 or a 1-9 scale with the endpoints *not happy* and *very happy* (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998; Walsh & Ayton, 2009; Wilson et al., 2000); and research exploring QOL has used a 0 to 100 scale with the endpoints *as bad as death/worst imaginable QOL* and *perfect health/best imaginable QOL* (Lacey et al., 2006; Smith et al., 2006; Ubel et al., 2001). Although these scales are easy and clear to use, they do not automatically give an indication of how much respondents believe their feelings would *change* from their current state. Whilst an indication of the degree of change can be inferred by subtracting their current ratings from their predicted ratings, this only implicitly determines whether respondents think there would be a difference. We propose that if respondents used a scale which got them to more explicitly consider whether they thought their feelings

would change, then this might also have an effect on the extremeness of their judgments.

The aim of our first 3 studies was to explore whether giving respondents the opportunity to judge the impact of an event on several more particular feelings before contemplating the impact on their general affective response results in less extreme forecasts, in comparison to judging the impact on their general affective response in the absence of any consideration of other feelings. Respondents predicted the impact of either living with a health state (negative event – studies 1 & 2) or winning a lottery jackpot (positive event – study 3). It was predicted that respondents who considered the impact on other feelings before general wellbeing would make less extreme forecasts than respondents who predicted the impact on general wellbeing first. Furthermore the studies examined whether respondents made less extreme judgments when they used a scale which explicitly enabled them to indicate the degree of change in their feelings from their current state to their predicted state, compared to when they used a standard scale in which this could be implicitly indicated.

4.3 Study 1: Judging the Impact of a Negative Event on Happiness

In this study respondents predicted the impact of Multiple Sclerosis (MS) on happiness, either before (control condition) or after (defocusing condition) they predicted the impact on various other informally chosen more specific feelings – what we term the *emotional impact* defocusing method. The other feelings were trustworthy, boring, independent, self-centred, friendly, annoying, sociable, and spiteful. Although some might argue that these adjectives do not all signify “feelings” as such, for our purposes it is sufficient that they indicate specific personal reactions that could vary in

response to an emotional event. In addition the study examined whether there was a difference in predictions depending on whether respondents used a traditional rating scale (standard scale) as used in previous studies (e.g. Walsh & Ayton, 2009) or one which allowed them to explicitly indicate the degree of change from their current feelings (change scale).

4.3.1 Method

4.3.1.1 Design

A 2 (defocusing condition: control, defocusing) x 2 (response scale: standard scale, change scale) independent samples design was used. The dependent variable was predicted happiness 1 year after living with MS, measured on one of the two response scales.

4.3.1.2 Participants

Respondents were 170 UK football fans who were recruited through an online agency and were awarded points for participating. Respondents took part in this study immediately after participating in an unrelated study. 67 (39%) were female and age ranged from 18 years to 70 years with a mean age of 36 years.

4.3.1.3 Procedure

Respondents completed the study online, and firstly indicated their gender, age, and occupation. They rated their current happiness by answering the question "how happy would you say you are in general" using the scale 1 (*not happy*) to 9 (*very happy*). They then read the following description of MS:

> Multiple sclerosis (MS) is a health condition which affects the nerve fibres in the central nervous system (the brain and spinal cord). These nerve fibres transmit messages that allow the brain to control the body. MS causes the body's immune system to attack a part of these nerve fibres which causes damage not only to the nerve fibres themselves but also to the messages they carry. There are many symptoms associated with MS and they can last from hours to months. The symptoms can include: changes in sensation; muscle spasm; pain; depression; severe fatigue; speech difficulties; cognitive impairment; difficulties with mobility and co-ordination; and problems with vision. People can experience a few or many of these symptoms, and in severe cases MS can cause mobility impairment and disability. Some symptoms can be managed with drugs and complementary therapies but others are less easy to manage. MS is the most common neurological disease to affect young adults in the western world, and affects around 85,000 people in the UK a year. The cause of the condition is unknown and there is no cure.

Respondents in the control group then predicted "how happy would you be if you had been living with MS for at least 1 year", before predicting the impact on other feelings. Respondents in the defocusing group predicted the impact on other feelings first, before predicting the impact on happiness. The order of presentation for the other feelings was trustworthy, boring, independent, self-centred, friendly, annoying, sociable, and spiteful, and this was consistent for all conditions. Respondents responded on either one of two scales, depending on the condition they had been

assigned to. Respondents in the standard scale condition made their predictions using a 1 (*not happy/trustworthy etc*) to 9 (*very happy/trustworthy etc*) scale. Respondents in the change scale condition made their predictions using a 1 (*much less happy/trustworthy*) to 5 (*same as now*) to 9 (*much more happy/trustworthy*) scale. Finally respondents indicated if they or someone close to them was living with MS.

4.3.2 Results

Twenty-six respondents reported that either they or someone close to them was living with MS, resulting in the removal of their data from the analyses. This left complete data for 144 respondents. There was no significant variation in the current happiness of respondents in the different conditions, $F(3, 140) = 1.25$, $p = .292$ (see table 4.1).

Responses given by respondents using the standard scale showed a significant difference between current happiness and predicted happiness 1 year after living with MS: control condition, $t(38) = 8.33$, $p < .001$, $r = .80$; defocusing condition, $t(31) = 4.27$, $p < .001$, $r = .61$. However, there was no significant difference between the control and defocusing conditions in their predicted happiness, $t(69) = -1.53$, $p = .130$. Furthermore by subtracting current happiness from predicted happiness for each respondent to create a predicted change in happiness score and comparing the predictions of the two groups, there was still no significant difference in their happiness predictions, $t(69) = -1.95$, $p = .055$. Additionally, as would be expected given that their relative position in the question order hardly changed, there was no significant difference in predictions for any of the other feelings (see table 4.1).

Table 4.1: Mean (and standard deviation) current happiness and predicted feelings 1 year after living with MS

	Standard Scale			Change Scale		
	Control	Defocusing	*p*	Control	Defocusing	*p*
Current Happiness	6.23 (1.69)	5.91 (1.75)	*ns*	6.53 (1.54) [b]	6.62 (1.75) [b]	*ns*
Predicted Happiness	3.51 (1.96)	4.19 (1.69)	*ns*[a]	2.61 (1.39)	3.86 (1.78)	.001[a]
Trustworthy	5.38 (2.01)	5.97 (1.81)	*ns*[a]	4.00 (1.60)	4.68 (1.67)	*ns*[a]
Boring	4.46 (2.25)	4.72 (2.08)	*ns*[a]	4.67 (1.96)	4.89 (2.05)	*ns*[a]
Independent	4.46 (1.89)	4.66 (1.64)	*ns*[a]	3.19 (1.75)	4.24 (1.69)	*ns*[a]
Self-centred	4.59 (1.74)	4.66 (1.64)	*ns*[a]	4.58 (1.87)	5.22 (1.48)	*ns*[a]
Friendly	5.67 (1.92)	5.53 (1.59)	*ns*[a]	4.36 (1.52)	4.76 (1.61)	*ns*[a]
Annoying	5.13 (2.13)	4.59 (1.93)	*ns*[a]	5.03 (1.80)	5.38 (1.19)	*ns*[a]
Sociable	4.44 (1.83)	4.78 (1.81)	*ns*[a]	4.06 (1.57)	4.35 (1.50)	*ns*[a]
Spiteful	4.26 (1.76)	3.84 (1.46)	*ns*[a]	4.89 (1.56)	4.92 (2.06)	*ns*[a]

Note. Comparisons are independent samples t-tests. [a]Bonferroni corrections were applied within each rating scale, $\alpha = 0.005$. [b]Ratings were made on the standard scale.

For respondents using the change scale, two one-sample t-tests comparing predictions to the "no change" value of 5 revealed that respondents predicted that they would be significantly less happy than they currently were; control condition $t(35) = -10.55$, $p < .001$, $r = .87$; defocusing condition, $t(36) = -3.88$, $p < .001$, $r = .54$.

However, there was a significant difference in predicted happiness between respondents in the control and defocusing conditions, $t(71) = -3.37$, $p = .001$, $r = .37$: respondents in the defocusing condition predicted that 1 year after living with MS there would be less of a change from their current happiness than respondents in the control condition. Again, there was no significant difference in their predictions for any of the other feelings (see table 4.1). Furthermore, when respondents' predictions in the defocusing condition were compared to the "no change" value of 5, we found that they predicted they would be significantly less happy (as reported above) but did not predict a change for any of the other feelings (Bonferroni correction applied, $\alpha = 0.005$).

4.3.3 Discussion

The aim of this study was to explore whether the defocusing method of considering the impact of a health state on a number of different feelings before considering the impact on happiness, results in more moderate forecasts. Less extreme forecasts were made by respondents who used the defocusing method together with the change scale, which measured how much they thought their predicted happiness would change from their current happiness. However, those respondents using a standard happiness scale did not make significantly less extreme predictions when using the defocusing method (although their predictions were in the right direction).

Why was the defocusing manipulation only successful for respondents using the change scale? We propose that this scale obliged respondents to contemplate any perceived difference between now (current happiness) and then (predicted happiness), which required them to jointly evaluate how they would feel at both time-points. In contrast, respondents using the standard scale predicted feelings with no explicit

requirement to reflect on how their feelings might *change*. Given that all feelings, except happiness, were recognised as unchanged by the health state, those respondents using the change scale would be more likely to be aware of the fact that some aspects of their experience would not change very much as a result of living with MS – as this would be made explicit by using the scale. This explicit recognition would cue them to appreciate that, to the extent that these feelings might be related to their happiness, happiness would also be relatively unchanged. However respondents using the standard scale - which did not require them to reflect on *change* from their current state - would not be provided with the same opportunity to appreciate that some aspects of their experience would be unaffected by MS. The differential efficacy of the defocusing method with these two scales could thus be due to respondents being differentially aware of the fact that some aspects of their experience would not change.

Are there other possible causes of the observed effects? As respondents were unaware of how many feelings they would rate, it is possible that the first item expressed their perception of the global impact of the event. Therefore when the first item was happiness then, due to its location, predictions would be more extreme in comparison to when happiness was the last item when respondents had the chance to communicate their predicted feelings more discerningly using several concepts. However, we found that although respondents predicted they would be less happy when the first feeling they were presented was “happy” (control condition), they did not predict a change in trustworthiness when the first feeling they were presented was “trustworthy” (defocusing condition). There was also no significant difference between

the two conditions as to their trustworthy predictions (see table 4.1); indicating that item order was not causing the defocusing effect.

Similarly, considering the impact of an event on other feelings might also have resulted in less extreme happiness predictions because respondents had already expressed their perceived negative impact of the event over the previous questions before they got to the happiness question (i.e. the impact bias had been diffused by the previous questions). If this were the case then we would expect to see responses to earlier items being more extreme than later items. We can see however from table 4.1 that this is not the case: respondents did not predict less movement from the "no change" value of 5 as the items were presented.

4.4 Study 2: Judging the Impact of a Negative Event on Quality of Life

In studies of the impact of health states, quality of life (QOL) - rather than happiness - is commonly measured. Accordingly, we replicated study 1 to examine whether the successful emotional impact defocusing method, which invites people to consider other feelings before general wellbeing, would also result in less extreme forecasts for QOL. It was predicted that respondents predicting QOL before other feelings would make more extreme predictions than respondents predicting QOL after other feelings.

4.4.1 Method

4.4.1.1 Design

A 2 (defocusing condition: control, defocusing) x 2 (response scale: standard scale, change scale) independent samples design was used. The dependent variable was

predicted QOL 1 year after living with MS, measured on one of the two response scales.

4.4.1.2 Participants

Respondents were 305 students and staff from various departments at the University of Kent and the University of Sheffield. They were recruited through an email inviting participation in the study and completed the questionnaire online. For taking part respondents were offered the opportunity to be included in a prize draw to win £20 of online store vouchers. 213 (70%) were female and age ranged from 18 years to 62 years with a mean age of 21 years.

4.4.1.3 Procedure

Respondents completed the study online, and indicated their gender, age, and occupation. They then rated their current QOL by answering the question "what would you rate your current QOL to be" using the scale 0 (*worst possible QOL*) to 100 (*best possible QOL*), before reading the description of MS. Respondents in the control group then predicted "what would your QOL be if had been living with MS for at least 1 year", before predicting the impact on other feelings. Respondents in the defocusing group predicted the impact on the other feelings first, before predicting the impact on their QOL. Respondents in the standard scale condition made their predictions using a 0 (*worst possible QOL/not trustworthy etc*) to 100 (*best possible QOL/ very trustworthy etc*) scale. Respondents in the change scale condition make their predictions using a 0 (*much lower QOL/much less trustworthy*), to 50 (*same as now*), to

100 (*much higher QOL/much more trustworthy*) scale. Finally respondents indicated if they or someone close to them was living with MS.

4.4.2 Results & Discussion

Forty respondents reported that either they or someone close to them was living with MS, resulting in the removal of their data from the analyses. This left complete data for 265 respondents. No significant variation was found in the ratings of current QOL by respondents in the four different conditions, $F(3, 261) = .69$, $p = .558$ (see table 4.2).

Responses made by respondents using the standard scale showed a significant difference between current QOL and predicted QOL: control condition, $t(68) = 15.51$, $p < .001$, $r = .88$; defocusing condition, $t(62) = 15.33$, $p < .001$, $r = .89$. Consistent with study 1, respondents in the defocusing condition did not make significantly less extreme predictions than respondents in the control condition, $t(130) = 1.56$, $p = .122$. When respondents' current QOL was subtracted from their predicted QOL to create a predicted change in QOL score, there was also no significant difference in the predictions of the two groups, $t(130) = .62$, $p = .539$. Additionally there was no significant difference in their predictions for any of the other feelings (see table 4.2).

Table 4.2: Mean (and standard deviation) current QOL and predicted feelings 1 Year after living with MS

				Change Scale		
	Control	Defocusing	*p*	Control	Defocusing	*p*
Current QOL	78.23 (15.46)	80.87 (10.45)	*ns*	78.07 (14.15)[b]	77.95 (12.91)[b]	*ns*
Predicted QOL	41.83 (17.60)	46.48 (16.60)	*ns*[a]	26.36 (14.00)	37.44 (21.23)	< .001[a]
Trustworthy	64.13 (22.74)	64.67 (22.24)	*ns*[a]	42.65 (16.44)	46.17 (11.15)	*ns*[a]
Boring	42.51 (27.37)	34.13 (23.92)	*ns*[a]	51.84 (21.10)	50.31 (19.08)	*ns*[a]
Independent	43.04 (23.59)	43.73 (20.85)	*ns*[a]	27.06 (15.71)	33.78 (16.31)	*ns*[a]
Self-centred	52.81 (24.45)	42.78 (23.89)	*ns*[a]	52.25 (20.10)	52.84 (15.39)	*ns*[a]
Friendly	61.84 (19.79)	65.00 (18.67)	*ns*[a]	44.87 (14.89)	50.06 (14.60)	*ns*[a]
Annoying	52.32 (24.52)	44.21 (24.89)	*ns*[a]	56.30 (20.09)	56.61 (16.78)	*ns*[a]
Sociable	44.77 (19.16)	51.21 (21.58)	*ns*[a]	33.12 (18.10)	35.33 (15.42)	*ns*[a]
Spiteful	42.42 (27.93)	38.65 (25.92)	*ns*[a]	49.59 (19.84)	50.78 (15.44)	*ns*[a]

Note. Comparisons are independent samples t-tests. [a]Bonferroni corrections were applied within each rating scale, $\alpha = 0.005$. [b]Ratings were made on the standard scale.

Responses made by respondents using the change scale showed a significant difference between the "no change" value of 50 and predicted QOL; control condition $t(68) = -14.03$, $p < .001$, $r = .86$; defocusing condition, $t(63) = -4.73$, $p < .001$, $r = .51$. Respondents who rated QOL after the other feelings (defocusing condition) made less extreme forecasts and predicted that there would be less of a change from their current QOL than respondents who rated QOL before rating other feelings (control condition), $t(131) = -3.58$, $p < .001$, $r = .30$. There were no significant differences in their predictions for the other feelings. Consistent with study 1, evaluating the difference between current and future feelings before making a judgment for general wellbeing resulted in significantly less extreme forecasts. Furthermore, when respondents' predictions in the defocusing condition were compared to the "no change" value of 50, we found that they predicted they would have significantly less QOL (as reported above); be less independent, $t(63) = -7.96$, $p < .001$, $r = .71$; less sociable, $t(63) = -7.61$, $p < .001$, $r = .69$; and more annoying, $t(63) = 3.15$, $p = 0.002$, $r = .37$; but did not predict a change in the other five feelings (Bonferroni correction applied, $\alpha = 0.005$).

This study replicated the basic finding of Study 1 showing a defocusing effect for affective forecasts of general wellbeing as a result of considering predictions for a range of other feelings when these predictions were made on a change scale. The defocusing method was again ineffective for respondents that used the standard scale – again confirming our suggestion regarding the basis for the defocusing effect. The replication for predicted QOL extends the generality of the defocusing effect and, importantly, shows the effect occurs for a standard measure of the impact of health states on wellbeing.

4.5 Study 3: Judging the Impact of a Positive Event on Happiness

Thus far we have been concerned with the impact of negative events - health states - on wellbeing. However, it has also been shown that people overestimate the impact of positive events on happiness e.g. winning a football game (Wilson et al., 2000), the Christmas holidays (Buehler & McFarland, 2001), and gaining money (Kermer, Driver-Linn, Wilson, & Gilbert, 2006). Brickman, Coates, & Janoff-Bulman (1978) studied the actual happiness of paraplegics and lottery winners and found that, despite the expectation that there would be marked differences in the happiness of the two groups, there was surprisingly little disparity – consistent with the idea that affective forecasts for both negative and positive events are routinely too extreme. We therefore decided to examine whether the emotional impact defocusing method of contemplating change for a range of feelings would also result in less extreme predictions for the impact of a positive event. Respondents predicted the impact of winning money (a lottery jackpot of £8,000,000) on various specific feelings, either before (control condition) or after (defocusing condition) they predicted the impact on happiness. It was predicted that, as per the previous two studies, considering how other feelings would change before considering the impact on happiness would result in less extreme predictions for the impact of winning money. As no effect of the standard scale had been found in the previous studies, only the change scale (as per study 1) was tested.

4.5.1 Method

4.5.1.1 Design

A 2 (defocusing condition: control, defocusing) independent samples design was used. The dependent variable was predicted happiness 1 year after winning £8,000,000 measured using the change scale.

4.5.1.2 Participants

Respondents were 290 students and staff from various departments at Keele University, Loughborough University, University of Chester, University of Southampton, and University of Sussex, and were recruited as per study 2. 191 (66%) were female and age ranged from 18 years to 60 years with a mean age of 21 years.

4.5.1.3 Procedure

The procedure was the same as per study 1 except that respondents read the following description "The lottery jackpot is £8,000,000 (8 million pounds)" before making their predictions. They also indicated whether they or someone close to them had previously won a lottery jackpot.

4.5.2 Results & Discussion

Twelve respondents reported that either they or someone close to them had previously won a lottery jackpot, resulting in the removal of their data from the analyses. This left complete data for 278 respondents. There was no significant variation in the ratings of current happiness by respondents in the two conditions, $t(276) = -0.32$, $p = .974$ (see table 4.3).

Table 4.3: Mean (and standard deviation) current happiness and predicted feelings 1 year after winning £8,000,000

	Change Scale		
	Control	Defocusing	*p*
Current Happiness	6.61 (1.38) [b]	6.61 (1.52) [b]	*ns*
Predicted Happiness	6.93 (1.34)	6.39 (1.32)	.001[a]
Trustworthy	4.82 (0.96)	4.79 (1.04)	*ns*[a]
Boring	4.15 (1.44)	3.79 (1.55)	*ns*[a]
Independent	6.65 (1.74)	6.91 (1.89)	*ns*[a]
Self-centred	5.09 (1.34)	5.09 (1.31)	*ns*[a]
Friendly	5.07 (0.73)	5.08 (1.10)	*ns*[a]
Annoying	5.42 (1.02)	5.34 (1.16)	*ns*[a]
Sociable	6.15 (1.22)	6.36 (1.37)	*ns*[a]
Spiteful	4.92 (0.77)	4.62 (1.12)	*ns*[a]

Note. Comparisons are independent samples t-tests. [a]Bonferroni corrections were applied, $\alpha = 0.005$. [b]Ratings were made on the standard scale.

Both groups of respondents predicted an increase in happiness as shown by a significant difference between the "no change" value of 5 and predicted happiness; control condition, $t(137) = 17.02$, $p < .001$, $r = .82$; defocusing condition, $t(139) = 12.45$, $p < .001$, $r = .73$. However respondents in the defocusing condition, who forecast happiness after predicting other feelings, anticipated a significantly smaller change from their current happiness than respondents in the control condition, who

made happiness predictions before predicting other feelings, $t(276) = 3.45$, $p = .001$, $r = .20$. There were no other significant differences between the groups' predictions for any other feelings. When respondents' predictions for all of the feelings in the defocusing condition were compared to the "no change" value of 5, we found that they predicted they would be significantly more happy (as reported above); more independent, $t(139) = 11.95$, $p < .001$, $r = .71$; more sociable, $t(139) = 11.74$, $p < .001$, $r = .71$; less boring, $t(139) = -9.28$, $p < .001$, $r = .62$; more annoying, $t(139) = 3.51$, $p = .001$, $r = .29$; and less spiteful, $t(139) = -4.02$, $p < .001$, $r = .32$; but did not predict a change for how trustworthy, friendly, or self-centred they would be (Bonferroni correction applied, $\alpha = 0.005$).

These findings are consistent with the previous two studies and suggest that when the difference between predicted and current happiness is explicitly considered, predictions are significantly less extreme when the impact on other feelings is judged first. These results expand on the findings from the previous two studies and reveal that the defocusing method of considering predicted change for a range of feelings before forecasting change for general wellbeing is an effective method for defocusing the impact of a positive event (winning money) as well as a negative event (health state).

4.6 Study 4: Life Domain Defocusing with a Negative Event

Conventional defocusing methods have endeavoured to transfer focus off the target event by drawing attention to other events which moderate happiness. However, as discussed in the introduction, when forecasting the impact of health states these methods have had limited success. One such defocusing method is the "life domain" exercise which asks respondents to contemplate to what extent various aspects of their

lives would be affected by a health state. Several attempts to moderate predictions using variations of this method have either had no effect (Walsh & Ayton, 2009) or have resulted in more extreme predictions, apparently refocusing rather than defocusing respondents (Ubel et al., 2001). Modifying this exercise to enable respondents to indicate how various concrete life domains would *change* if they were living with a health state has also failed to produce less extreme predictions (Ubel et al., 2005). However respondents in this study only considered how aspects of their lives would change; their predictions for the impact on their general wellbeing were not made on a scale which explicitly invited them to indicate change from their current state.

Based on the success of our emotional impact defocusing method, we decided to adapt Ubel et al.'s (2005) life domain exercise so as to prompt respondents to consider not only how various life domains would change, but also then to indicate how general wellbeing would change from its current state. If the failure of Ubel et al.'s defocusing exercise resulted from the fact that it was not used in conjunction with a change scale for general wellbeing then we would expect the method to be effective when used with a change scale for the affective forecasts. Accordingly it was hypothesised that respondents who contemplated changes in life domains before predicting general wellbeing would make less extreme forecasts then respondents who did not participate in the defocusing method, but that this effect would only occur for respondents rating general wellbeing on a change scale rather than a standard scale. As per study 1, respondents predicted the impact of MS on happiness (control condition)

but some respondents considered the impact of MS on life domains beforehand (defocusing condition).

4.6.1 Method

4.6.1.1 Design

A 2 (defocusing condition: control, defocusing) x 2 (response scale: standard scale, change scale) independent samples design was used. The dependent variable was predicted happiness 1 year after living with MS, measured on one of the two response scales.

4.6.1.2 Participants

Respondents were 223 students and staff from various departments at Aberystwyth University, Aston University, and University of Bath, and were recruited as per study 2. 143 (64%) were female and age ranged from 18 years to 63 years with a mean age of 23 years.

4.6.1.3 Procedure

As per study 1, respondents indicated their gender, age, and occupation; rated their current happiness; and read the description of MS. Respondents in the defocusing condition rated the impact on life domains using the scale -3 (*much worse than now*) to 3 (*much better than now*) in response to the question: "if you were living with MS, what would your experience of these different aspects of your life be like compared to now". The life domains were visiting with friends and/or family; paying bills; holiday and travel; spending time on the internet; physical recreational activities; arguing with

family and/or friends; reading and/or watching TV; enjoying a meal. Respondents in both the control and defocusing conditions then predicted "how happy would you be if you had been living with MS for at least 1 year" using the change or standard scale (as per study 1). Finally respondents indicated if they or someone close to them was living with MS.

4.6.2 Results & Discussion

27 respondents reported that either they or someone close to them was living with MS, resulting in the removal of their data from the analyses. This left complete data for 196 respondents. There was no significant variation in the ratings of current happiness by respondents in the four conditions, $F(3, 192) = 0.60$, $p = .616$ (see table 4.4).

Responses made by respondents using the standard scale showed a significant difference between current happiness and predicted happiness: control condition, $t(54) = 13.91$, $p < .001$, $r = .88$; defocusing condition, $t(46) = 10.71$, $p < .001$, $r = .84$. However, consistent with studies 1 and 2, and with previous research using the life domain defocusing method, respondents using the standard scale did not make significantly less extreme happiness predictions in the defocusing condition than in the control condition, $t(100) = -0.49$, $p = .626$ (see table 4.4). When current happiness was subtracted from predicted happiness to create a predicted change in happiness score, there was also no significant difference in the predictions of the two groups, $t(100) = -0.95$, $p = .347$.

Table 4.4: Mean (and standard deviation) current & predicted happiness, and predicted impact on life domains 1 year after living with MS

	Standard Scale			Change Scale		
	Control	Defocusing	*p*	Control	Defocusing	*p*
Current Happiness	6.58 (1.47)	6.38 (1.61)	*ns*	6.37 (1.65)[a]	6.75 (1.72) [a]	*ns*
Predicted Happiness	3.16 (1.56)	3.32 (1.64)	*ns*	2.52 (1.11)	2.65 (1.33)	*ns*
Visiting friends	-	-1.09 (1.27)	-	-	-0.88 (1.63)	-
Paying bills	-	-1.13 (1.01)	-	-	-1.02 (1.36)	-
Holiday & travel	-	-2.13 (0.82)	-	-	-2.08 (1.30)	-
Internet	-	-0.49 (1.10)	-	-	0.10 (1.40)	-
Recreational activities	-	-2.21 (0.98)	-	-	-2.10 (1.39)	-
Arguing family	-	-0.64 (1.17)	-	-	-0.54 (1.34)	-
Reading/TV	-	-0.11 (1.01)	-	-	0.08 (1.33)	-
Meal	-	-0.72 (1.04)	-	-	-0.60 (1.27)	-

Note. Comparisons are independent samples t-tests. [a]Ratings were made on the standard scale.

Responses given by respondents using the change scale also showed a significant difference between the "no change" value of 5 and predicted happiness; control condition $t(45) = -15.14$, $p < .001$, $r = .91$; defocusing condition, $t(47) = -12.28$, $p < .001$, $r = .87$. However, and contrary to our hypothesis, respondents in the defocusing condition did not make significantly less extreme happiness predictions than respondents in the control condition, $t(92) = -0.49$, $p = .625$ (see table 4). The life

domain defocusing exercise did not result in less extreme forecasts when used with the standard scale or the change scale. We examined whether respondents in the defocusing condition predicted a change for the eight life domains: Respondents predicted that if they were living with MS their experience of visiting with friends and/or family, $t(47) = -3.71$, $p = .001$, $r = .48$; paying bills, $t(47) = -5.20$, $p < .001$, $r = .60$; holiday and travel, $t(47) = -11.09$, $p < .001$, $r = .85$; physical recreational activities, $t(47) = -10.51$, $p < .001$, $r = .84$; and enjoying a meal, $t(47) = -3.30$, $p = .002$, $r = .43$, would be worse than now; but did not predict a change for spending time on the internet, arguing with family and/or friends; and reading and/or watching TV (Bonferroni correction applied, $\alpha = 0.005$).

It is not altogether surprising that the life domain defocusing method did not prove an effective means of reducing the extremeness of affective forecasts: as noted above this method has been tested in several studies and has never proved effective (Ubel et al., 2001; Ubel et al., 2005; Walsh & Ayton, 2009). Our observation in this study of the failure of the method when used in conjunction with a change scale – where respondents are asked to indicate how much their predicted happiness would change - indicates that this is not solely due to the lack of a focus on change from respondents' current state. There is, presumably, some other reason for the failure of this method.

The failure of the life domain forecasting method when used in conjunction with a change scale contrasts with the success of the emotional impact defocusing method. In studies 1-3 we have shown affective forecasts that are less extreme after defocusing with the change scale – but not with the standard scale (studies 1 & 2). The

fact that Ubel et al.'s life domain defocusing method was ineffective even when contemplating change in general wellbeing, suggests that the change scale is not the only reason for the success of the emotional impact defocusing method. While the change scale appears to be a necessary but not sufficient element for emotional impact defocusing, this method plainly has some other quality not embodied in the life domain forecasting method.

4.7 General Discussion

Our studies show that the act of considering the impact of an event on a range of feelings before assessing general wellbeing reduces bias in predicted impact, but only when explicit consideration of how predicted feelings will change from current feelings is taken into account. Contemplating other feelings prior to general wellbeing is different to other defocusing methods which have prompted people to consider a range of activities (including some that may be relatively unaffected by the health state) before forecasting general wellbeing. Moreover, unlike other defocusing methods, we have shown that the emotional impact defocusing method is effective; it produces less extreme forecasts for both the impact of a positive event (winning money) and a negative event (health state). Furthermore, it also reduces the bias in both predicted happiness and predicted QOL.

Respondents in both the control and defocusing conditions made extreme predictions in comparison to their current state, and therefore we conclude that it is likely that these judgments were affected by an impact bias. Although the accuracy of predictions can not be directly gauged as we have no information on the happiness of people living with MS, people living with a range of other health states show no or

minimal (Brickman et al., 1978; Riis et al., 2005; Schulz & Decker, 1985; Walsh & Ayton, 2009) differences in happiness in comparison with the general population. As we have no reason to assume that patients living with MS would be any different, we can be confident that most of the perceived difference between our respondents' predicted and current wellbeing reflects an impact bias.

Why does considering the emotional impact of an event on an array of emotions reduce the bias in predictions for happiness and QOL? Our interpretation of this effect is that as some of the considered emotions (e.g. how trustworthy or friendly one might become) were readily seen as relatively unchanging as a function of the health state, which cues respondents to realise that the impact of the health state would not be as extreme. In this respect, our defocusing method uses a similar rationale as other researchers (Ubel et al., 2001; Wilson et al., 2000) developed to justify their methods. Accordingly, we envisage that our defocusing method changes what people *think* about the impact of the event on general wellbeing. Thus, peoples' initial reactions about the impact are mitigated by contemplation of other feelings i.e. they appreciate that some other feelings would not be affected which leads to a reappraisal of general wellbeing.

However, another possibility is that being asked about other feelings changes what people *express* in response to the request to predict general wellbeing. According to this idea peoples' views about the impact of the event may not change but as, in our defocusing condition, they are able to convey any predicted impact over several feelings; consequently reference to other feelings reduces the communicative load on the concept of happiness or QOL. As a result peoples' concept of the scope of happiness or QOL could become more focused. If so their beliefs about the predicted

impact of the event could remain the same, but their understanding of what the question is targeting changes. To the extent that this effect occurs, the extremeness of forecasts could be attributed to an artefact of the methodology for measuring forecasts rather than the forecasts themselves. Even so, and regardless of this possible interpretation, the emotional impact defocusing method is successful in reducing the extremeness of affective forecasts.

One implication of our findings is that people who are contemplating the impact of a health state or treatment on their wellbeing could be counseled to think about the richer emotional impact as a practical method of reducing the bias in their overall judgments; thereby allowing them to more accurately envisage what life would be like.

In the introduction we explained that the status of the focusing illusion has been queried: Ubel et al. (2001) and Ubel et al. (2005) were unable to defocus predictions of the affective impact of health states and concluded that, as a result, the focusing illusion could not account for the bias in predictions. Although Ubel et al. (2005) conceded that their failure to demonstrate defocusing may have been due to the inadequacy of their defocusing methods, they argued that this was not likely to be the case. Instead they suggested that, although the focusing illusion was a reasonable explanation for the bias shown in predictions as to the impact of relatively trivial events (e.g. whether a team wins or loses a football game), it was unlikely to be the basis for the bias shown in forecasts of the impact of events with long-term consequences (e.g. health states). Nonetheless, the findings of our studies indicate that it is possible to defocus respondents considering the impact of a health state by getting

them to reflect on the emotional impact across a variety of feelings. Accordingly, as it *is* possible to defocus these judgments, we propose that the focusing illusion serves as a plausible explanation for the bias shown in forecasts of the impact of health states - as well as other events - on wellbeing.

4.8 References

Ayton, P., Pott, A., & Elwakili, N. (2007). Affective forecasting: Why can't people predict their emotions? *Thinking and Reasoning. 13*, 62–80.

Baron, J., Asch, D. A., Fagerlin, A., Jepson, C., Loewenstein, G., Riis, J., et al. (2003). Effect of assessment method on the discrepancy between judgments of health disorders people have and do not have: A web study. *Medical Decision Making. 23*, 422-434.

Boyd, N. F., Sutherland, H. J., Heasman, K. Z., Tritchler, D. L., & Cummings, B. J. (1990). Whose utilities for decision analysis? *Medical Decision Making. 10*, 58-67.

Brickman, P., Coates, D., & Janoff-Bulman, R. (1978). Lottery winners and accident victims: Is happiness relative? *Journal of Personality & Social Psychology. 36*, 917-927.

Buehler, R., & McFarland, C. (2001). Intensity bias in affective forecasting: The role of temporal focus. *Personality & Social Psychology Bulletin. 27*, 1480-1493.

Gilbert, D. T., Driver-Linn, E., & Wilson, T. D. (2002). The trouble with Vronsky: Impact bias in the forecasting of future affective states. In P. Salovey, & L. Feldman-Barrett (Eds.), *The Wisdom of Feeling* (pp. 144-166). New York, NY: Guilford.

Gilbert, D. T., Pinel, E. C., Wilson, T. D., Blumberg, S. L., & Wheatley, T. P. (1998). Immune neglect: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology. 75*, 617-638.

Hurst, N. P., Jobanputra, P., Hunter, M., Lambert, M., Lochhead, A., & Brown, H. (1994). Validity of EuroQol – a generic health status instrument – in patients with Rheumatoid Arthritis. *British Journal of Rheumatology. (33)*, 655-662.

Kermer, D. A., Driver-Linn, E., Wilson, T. D., & Gilbert, D. T. (2006). Loss aversion is an affective forecasting error. *Psychological Science, 17,* 649–653.

Lacey, H. P., Fagerlin, A., Loewenstein, G., Smith, D. M., Riis, J., & Ubel, P. A. (2006). It must be awful for them: Perspective and task context affects ratings for health conditions. *Judgment and Decision Making. 1*, 146-152.

Riis, J., Loewenstein, G., Baron, J., Jepson, C., Fagerlin, A., & Ubel, P. A. (2005). Ignorance of hedonic adaptation to hemodialysis: A study using ecological momentary assessment. *Journal of Experimental Psychology: General. 134*, 3-9.

Schulz, R., & Decker, S. (1985). Long-term adjustment to physical disability: The role of social support, perceived control, and self-blame. *Journal of Personality & Social Psychology. 48*, 1162-1172.

Smith, D. M., Sherriff, R. L., Damschroder, L., Loewenstein, G., & Ubel, P. A. (2006). Misremembering colostomies: Former patients give lower utility ratings than do current patients. *Health Psychology. 25*, 688-695.

Ubel, P. A., Loewenstein, G., Hershey, J., Baron, J., Mohr, T., Asch, D. A., & Jepson, C. (2001). Do nonpatients underestimate the quality of life associated with chronic health conditions because of a focusing illusion? *Medical Decision Making. 21*, 190-199.

Ubel, P. A., Loewenstein, G., & Jepson, C. (2005). Disability and sunshine: Can hedonic predictions be improved by drawing attention to focusing illusions or emotional adaptation? *Journal of Experimental Psychology: Applied. 11*, 111-123.

Walsh, E., & Ayton, P. (2009). What would it be like for you and for me? Judged impact of chronic health conditions on happiness. *Medical Decision Making. 29*, 15-22.

Wilson, T. D., Wheatley, T., Meyers, J. M., Gilbert, D. T., & Axsom, D. (2000). Focalism: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology. 78*, 821-836.

Chapter 5: Biased Forecasts for the Impact of Health States: Encouraging Consideration of Sample Distributions Improves Predictions

Biased Forecasts for the Impact of Health States: Encouraging Consideration of Sample Distributions Improves Predictions

Emma Walsh & Peter Ayton

Department of Psychology, City University

Emma Walsh & Peter Ayton, Department of Psychology, City University.

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Correspondence concerning this article should be address to Emma Walsh, City University – Department of Psychology, Northampton Square, London, EC1V 0HB, UK. Email: e.l.walsh@city.ac.uk

5.1 Abstract

People base their affective forecasts for familiar events on recalled atypical instances of that event, contributing to biased judgments (Morewedge et al., 2005). We propose that if an extreme instance is used for familiar events, such as missing a train, then it would also be used for novel events, such as the impact of health states. This would contribute to the bias shown for the impact of health states as the collective well-being of people with a health state can not be accurately characterised by one extreme case. A proposed remedy would be to encourage contemplation of the wider range of well-being, which we tested by informing respondents about potential distributions of judgments - albeit in an unrelated setting of ratings of film enjoyment. 262 respondents predicted the (average) happiness of people living with various health states and people similar to themselves, either before and after or just after a tutorial on distributions, averages, and extreme ratings. Respondents made significantly less extreme predictions after the tutorial suggesting that increasing awareness of sample distributions encouraged consideration of the variation in well-being.

Key words: affective forecasting, health states, adaptation, memory

5.2 Introduction

Despite there being little difference in the happiness of people living with health states (Haves) and the general public (Not-haves) (Brickman, Coates, & Janoff-Bulman, 1978; Riis et al., 2005; Schulz & Decker, 1985; Walsh & Ayton, 2009), people incorrectly overestimate the impact of living with a health state on both their own and other people's well-being (Baron et al., 2003; Ubel et al., 2001; Walsh & Ayton, 2009). This has led to a disparity between Not-haves' predictions and the actual experiences of Haves, who typically report a greater well-being than Not-haves predict (Boyd, Sutherland, Heasman, Tritchler, & Cummings, 1990; Hurst et al., 1994; Riis et al., 2005; Smith, Sherriff, Damschroder, Loewenstein, & Ubel, 2006).

Several possible explanations for this overestimation in Not-haves' judgments have been proposed. One such suggestion is that people mistakenly focus on the impact of the health state and disregard other events which may also impact on emotions - referred to as the *focusing illusion* (Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000). People focus on the negative images of life with a health state and fail to consider the aspects of life which would be unaffected. Attempts to reduce this illusion for the judged impact of health states by drawing attention to these other events have failed to consistently produce more accurate predictions (Baron et al., 2003; Ubel et al., 2001; Walsh & Ayton, 2009). However, getting Not-haves to consider the more detailed emotional impact of a health state has been shown to reduce the bias in predictions (Walsh & Ayton, submitted).

Another possible explanation for Not-haves' biased judgments has focused on whether Haves and Not-haves differentially interpret response scales. Issues regarding

scale recalibration could go some way to explaining the discrepancy between the two groups' judgments, and concerns over this have resulted in reservations about the validity of comparing Not-haves' and Haves' ratings. However, Lacey et al. (2008) found no evidence for scale recalibration when they compared Haves' and Not-haves' quality of life (QOL) judgments about the impact of the Haves' health state. They found Haves rated QOL for their own health state higher than Not-haves but did not rate other health states and adverse events differently.

A further suggestion, known as *immune neglect*, is that Not-haves fail to appreciate that people adapt to changes in their circumstances (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998). Haves find ways to cope and adapt to life-changes they may have to make, and Not-haves fail to take this adaptation into consideration and overpredict the impact of living with a health state. Taking part in an adaptation exercise designed to encourage Not-haves to contemplate their own ability to adapt (Damschroder, Zikmund-Fisher, & Ubel, 2005) or to predict how their experience of the health state would change over time (Ubel, Loewenstein, & Jepson, 2005), have been shown to result in less extreme forecasts.

Our memories for past events can also lead us to make biased forecasts when predicting the impact of that same event in the future. Morewedge, Gilbert, and Wilson (2005) found that when people predicted the impact of an event they had experienced before they were likely to recall an atypical instance of that event. For example, when asked to predict the impact of missing a train, people spontaneously recalled their *worst* past instance and based their forecast on that unrepresentative occasion, leading to a biased forecast. Following on from this, we propose that if people use extreme

instances when predicting the impact of a familiar event despite having experience of more typical instances, then it is plausible that they will also use extreme instances when predicting the impact of a novel event where they have no range of experiences to base their judgment on. Our Not-haves are unlikely to have experience of judging the well-being of Haves, and therefore, just as Morewedge et al.'s respondents recalled their most negative instance of missing a train, we suggest that people contemplating the well-being of Haves would imagine and anchor on an extreme example of a person living with that health state. Moreover, Not-haves would be unaware of the extremeness of their example, and consequently insufficiently adjust from it when considering the well-being of Haves. Furthermore, as Not-haves believe that Haves are less happy than Haves actually report being, it is likely that their extreme instance would be to imagine someone who has been adversely affected, rather than someone who has adjusted well.

Consideration of the well-being of someone who has been adversely affected by a health state is not unjustified when contemplating the well-being of a group. Just as there is variation in the well-being of the general public, there is also variation in the well-being of people living with health states. Living with a health state can have a differential impact depending on many factors such as co-occurrence of other health states e.g. depression (Amato et al., 2001; Schrag, Jahanshahi, & Quinn, 2000); wealth (Smith, Langa, Kabeto, & Ubel, 2005); and coping strategies (Magnus, Elfström, Rydén, Kreuter, Taft, & Sullivan, 2005). However, basing a judgment purely on an extreme negative instance will lead to a biased judgment because collectively Haves' well-being will not be accurately represented by a single extreme case. For that reason,

a remedy for the extremeness of people's forecasts could be developed as an antidote to this process: people contemplating the impact of a health state could consider the wider range of well-being of people with a health state, rather than just focusing on a negative example.

We propose that a method for encouraging respondents to contemplate the fuller array of Haves' well-being would be to inform them about the potential distributions of judgments. One way of achieving this could be to provide respondents with more information about the impact of the health state and the potential well-being of Haves. However, we wanted to explore whether informing respondents about the distribution of judgments in a non-health-state scenario would encourage them to consider the wider range of Haves' well-being, and reduce the bias in their subsequent predictions. Additionally, in order to further encourage consideration of the wider well-being of people living with health states, we examined whether asking respondents to rate the "average happiness" of people living with a health state would result in more moderate forecasts than respondents asked to rate the "happiness" of people living with a health state. Studies exploring affective forecasts have typically asked respondents to rate "happiness", which could potentially allow respondents to focus on an extreme instance. Asking respondents to specifically consider "average happiness" might encourage consideration of the fuller array of well-being.

In the subsequent study, respondents were asked to predict the "happiness" (or the "average happiness") of people living with Crohn's disease, multiple sclerosis, Parkinson's disease, and people who were similar in age and background to themselves. Half of the respondents made these judgments before and after taking part

in an exercise in which they were given a brief tutorial on distributions, averages, and extreme ratings in the context of ratings of film enjoyment, and the other half made these judgments only after the tutorial. It was predicted that judgments for "happiness" and "average happiness" made after the tutorial would be significantly less extreme than judgments made before.

5.3 Method

5.3.1 Design

There were 4 independent-samples conditions depending on whether respondents rated "happiness" and/or "average happiness", and whether they made these judgments both pre- and post-tutorial or just post-tutorial ("happiness" pre-tutorial & "average happiness" post-tutorial, "average happiness" pre- & post-tutorial, "average happiness" post-tutorial, "happiness" post-tutorial) (see appendix 1). Each respondent made these ratings for 4 states (multiple sclerosis, Parkinson's disease, Crohn's disease, people similar in age and background (subsequently referred to as similar-state)) and the state descriptions were presented in the same order for all respondents. The dependent variable of "happiness" or "average happiness" was rated on a scale from 1 (*not happy*) to 9 (*very happy*).

5.3.2 Participants

Respondents were 262 students and staff from various departments at Bangor University, Brunel University, Newcastle University, University of Nottingham, University of St. Andrews, and University of Strathclyde. They were recruited through an email inviting participation in the study and completed the questionnaire online. For

completing the questionnaire, respondents were offered the opportunity to take part in a prize draw to win £20 of online store vouchers. 55% of respondents were female, and age ranged from 18 to 58 years with a mean age of 20 years.

5.3.3 Procedure

Respondents who made ratings both pre- & post-tutorial read descriptions of each of the 3 health states which included information about its nature, symptoms, treatment, UK prevalence, and cause (see appendix 2). For the similar-state, respondents were asked to consider people who were similar in age and background to themselves. After each description respondents rated on the scale "how happy do you think people living with (health state) are" or "how happy do you think people living with (health state) are on average" (for the similar-state the questions were "how happy do you think these people are" or "how happy do you think these people are on average").

All respondents were then told that they were going to be asked to think about the happiness of people living with different health states. In order to do so they were going to be provided with some information regarding simple statistical terms in order to answer subsequent questions. They were given an example of a group of people who had rated their enjoyment of a film. It was explained how the average enjoyment rating was calculated and the distribution of ratings was shown on a graph (normal distribution) and explained in words. Their attention was drawn to the extreme ratings on the graph and it was explained how the 10% who had enjoyed the film the most/least rated their enjoyment. They were then shown skewed graphs of enjoyment ratings and attention was drawn to the extreme ratings (see appendix 3).

All respondents were then presented with the state descriptions and after each description provided ratings on the scale in response to each of the following questions: “thinking about the extreme ratings, where would the 10% of the happiest people living with (health state) rate their happiness” and “thinking about the extreme ratings, where would the 10% of the least happy people living with (health state) rate their happiness”. For each of these questions respondents could enter two numbers: if they felt these extreme ratings would cover a range of values then they were told to indicate two different numbers but if they felt the extreme ratings would fall on one number then they were told to enter the same number twice. Respondents then rated on the scale “how happy do you think people living with (health state) are” or “how happy do you think people living with (health state) are on average” (for the similar-state respondents answered “where would the 10% of the happiest /least happy people who are similar in age and background to yourself rate their happiness” and then “how happy do you think people who are similar in age and background to yourself are (on average)”).

Finally, respondents indicated their age, gender, occupation, whether they or someone close to them was living with one of the health states, and whether they wanted to be entered into the prize draw.

5.4 Results

Sixty-seven respondents indicated that they or someone close to them was living with one of the health states and therefore their data were excluded from the analyses, resulting in complete date for 195 respondents. Analyses of the ratings for the three health states were conducted separately from the ratings for the similar-state.

Before the tutorial, a 2 (question type: happiness, average happiness) x 3 (health state: multiple sclerosis, Parkinson's Disease, Crohn's Disease) mixed ANOVA revealed no significant difference in the predictions of respondents predicting "happiness" (M = 3.92) or those predicting "average happiness" (M = 4.22) for the health states, $F(1, 101) = 1.76$, $p = .19$. Respondents did predict a differential impact of the health states on happiness, $F(2, 202) = 6.87$, $p < .01$, $\eta_p^2 = .06$, but the interaction between question type and health state was not significant, $F(2, 202) = 0.24$, $p = .79$. An independent samples t-test for the similar-state also showed no difference before the tutorial in "happiness" predictions (M = 7.22) compared to "average happiness" predictions (M = 6.86), $t(101) = 1.39$, $p = .17$ (see table 5.1).

For respondents who only made post-tutorial ratings, a 2 (question type: happiness, average happiness) x 3 (health state: multiple sclerosis, Parkinson's Disease, Crohn's Disease) mixed ANOVA revealed that respondents predicting "happiness" for the health states made significantly more extreme predictions (M = 4.25) than those rating "average happiness" (M = 4.75), $F(1, 90) = 5.47$, $p = .02$, $r = .24$. As before, they predicted a differential impact of the health states, $F(1.79, 161.11) = 7.73$, $p < .01$, $\eta_p^2 = .08$; but the interaction was not significant, $F(2, 180) = 0.82$, $p = .44$. However, there was no significant difference between post-tutorial ratings of "happiness" (M = 6.68) and "average happiness" (M = 6.31) predictions for the similar-state, $t(90) = -1.48$, $p = .14$ (see table 5.1).

Table 5.1: Mean (and standard deviation) predicted happiness and average happiness pre- and post-tutorial

		Pre-tutorial ratings		Post-tutorial ratings	
State	Condition	Happiness	Average happiness	Happiness	Average Happiness
	pre/post	3.60 (1.33)	-	-	3.98 (1.09)
	pre/post	-	3.94 (1.43)	-	4.25 (1.28)
	post	-	-	-	4.55 (1.17)
	post	-	-	3.93 (1.36)	-
	pre/post	3.87 (1.46)	-	-	4.23 (1.25)
	pre/post	-	4.26 (1.45)	-	4.75 (1.14)
	post	-	-	-	4.76 (1.22)
	post	-	-	4.16 (1.17)	-
	pre/post	4.28 (1.56)	-	-	4.56 (1.55)
	pre/post	-	4.45 (1.66)	-	4.84 (1.27)
	post	-	-	-	4.95 (1.11)
	post	-	-	4.66 (1.64)	-
	pre/post	7.22 (1.25)	-	-	6.41 (1.15)
	pre/post	-	6.86 (1.40)	-	6.44 (1.15)
	post	-	-	-	6.31 (1.28)
	post	-	-	6.68 (1.12)	-

Note. MS = multiple sclerosis; PD = Parkinson's disease; CD = Crohn's disease; Similar = people who are similar in age and background.

A 2 (judgment: pre-tutorial, post-tutorial) x 2 (pre-tutorial judgment: happiness, average happiness) x 3 (health state: multiple sclerosis, Parkinson's Disease, Crohn's Disease) mixed ANOVA revealed that respondents who made judgments both pre- and post-tutorial made "average happiness" predictions post-tutorial (M = 4.44) that were significantly less extreme than their pre-tutorial judgments (M = 4.07), $F(1, 101) = 26.49$, $p < .01$, $r = .46$, and this was regardless of whether they had rated "happiness" or "average happiness" pre-tutorial, $F(1, 101) = 0.14$, $p = .71$. No interactions involving health state were significant. Furthermore, their post-tutorial "average happiness" predictions did not differ from respondents who *only* made post-tutorial "average happiness" judgments (M = 4.75) revealing that it was not the process of making two ratings which caused the moderation in predictions, $F(2, 143) = 3.04$, $p < .05$. Consistent with these findings, analysis of the similar-state revealed that respondents' post-tutorial "average happiness" judgments (M = 6.43) were significantly less extreme than their pre-tutorial judgments (M = 7.03), $F(1, 101) = 39.56$, $p < .01$, $r = .56$, but this did depend on whether they had rated "happiness" or "average happiness" pre-tutorial, $F(1, 101) = 4.16$, $p = .04$, $r = .20$. Simple main effects revealed that predictions for both groups were more moderate after the tutorial but those who rated "happiness" pre-tutorial moderated their predictions more, $t(48) = 6.44$, $p < .01$, than those who rated "average happiness" pre-tutorial, $t(53) = 2.83$, $p < .01$ (see table 5.1). Consistent with the analyses for the three health states, their predictions did not differ from respondents who only rated "average happiness" post-tutorial (M = 6.31) revealing that it was not the process of making two ratings which caused the moderation in predictions, $F(2, 143) = 0.16$, $p = .85$.

Comparison of "happiness" predictions for the health states by respondents who made the judgments before the tutorial (M = 3.92) and those who made them after the tutorial (M = 4.25) showed that there was no significant difference, $F(1, 96) = 2.18$, p = .14. However "happiness" predictions for the similar-state were more moderately rated by respondents rating it post-tutorial (M = 6.68) than respondents rating it pre-tutorial (M = 7.22), $t(96) = 2.25$, p = .03, r = .22.

5.5 Discussion

The aim of this study was to examine whether informing Not-haves about sample distributions in a non-health-state scenario could moderate their subsequent predictions about the "happiness" or "average happiness" of people living with health states and of people similar in age and background to themselves. Before the tutorial, there was no differentiation in the predictions of respondents who rated "happiness" and those who rated "average happiness" when predicting the well-being of Haves or people similar in age or background to themselves, suggesting that respondents were not automatically responsive to the difference in the wording of the questions. However, when rating Haves' well-being after the tutorial, respondents rating "average happiness" made less extreme predictions than respondents rating "happiness". Furthermore, respondents who made ratings both before and after the tutorial made significantly less extreme "average happiness" ratings after the tutorial than before, regardless of whether they had rated "happiness" or "average happiness" before the tutorial. Finally, there was no difference in "happiness" ratings pre- and post-tutorial. We propose that the tutorial increased respondents' sensitivity to a difference between "happiness" and "average happiness", by making them aware of the potential variation

in well-being with a health state. This in turn had a moderating effect on predicted "average happiness" where respondents could take account of the range of well-being, but not on predicted "happiness" where we suggest it was easier for respondents to focus on the more extreme cases.

When rating the well-being of people similar in age and background to themselves, "happiness" predictions were more moderate after the tutorial than before, and respondents who made ratings both pre-and post-tutorial made less extreme post-tutorial "average happiness" predictions. Furthermore no difference was found between post-tutorial "happiness" and "average happiness" predictions suggesting the tutorial had a moderating effect on both. Although predictions were more moderate after the tutorial, no differentiation was made between "happiness" and "average happiness" either pre- or post-tutorial. This could either be because respondents only considered themselves when making these ratings, something they could not do for health states they had no experience of, or that they considered the potential range of well-being when rating both "happiness" and "average happiness". Respondents would have more experience of people who were similar in age and background to them than they would of people living with the health states and therefore, aside from the information in the tutorial, would have already had experience of a range of typical and extreme cases to base their judgment on.

Although predictions were less extreme after the tutorial, we are unable to benchmark the accuracy of predictions because we are unaware of the well-being of Haves with the three health states tested. However, it has been well documented that

people overestimate the impact of health states on happiness, and there is no reason to believe that this overestimation did not occur in the current study.

Although we have not directly tested whether Not-haves' biased judgments are caused by focusing on an extreme instance, drawing their attention to a potential distribution of judgments did reduce the bias in their forecasts, suggesting that they had not initially considered the wider distribution. Furthermore this was achieved without providing any further information about the event (the health state) being judged: despite only being informed about distributions of judgments in an unrelated setting, respondents were able to draw on this information to make less extreme predictions as to the impact of health states.

One practical implication of this study is that a remedy for biased affective forecasts as to the impact of health states might be to consider the wider range of well-being. People who are deliberating the implications of a treatment or health state on well-being could be advised to reflect on the wide range of Haves' well-being in order to discourage focusing on extreme cases, and in so doing reduce the bias in their judgments.

5.6 References

Amato, M. P., Ponziani, G., Rossi, F., Liedl, C. L., Stefanile, C., & Rossi, L. (2001). Quality of life in Multiple Sclerosis: The impact of depression, fatigue, and disability. *Multiple Sclerosis. 7*, 340-344.

Baron, J., Asch, D. A., Fagerlin, A., Jepson, C., Loewenstein, G., Riis J., et al. (2003). Effect of assessment method on the discrepancy between judgments of health disorders people have and do not have: A web study. *Medical Decision Making. 23*, 422-434.

Boyd, N. F., Sutherland, H. J., Heasman, K. Z., Tritchler, D. L., & Cummings, B. J. (1990). Whose utilities for decision analysis? *Medical Decision Making. 10 (1)*, 58-67.

Brickman, P., Coates, D., & Janoff-Bulman, R. (1978). Lottery winners and accident victims: Is happiness relative? *Journal of Personality & Social Psychology. 36 (8)*, 917-927.

Damschroder, L. J., Zikmund-Fisher, B. J., & Ubel, P. A. (2005). The impact of considering adaptation in health state valuation. *Social Science & Medicine. 61*, 267-277.

Elfström, M. L., Rydén, A., Kreuter, M., Taft, C., & Sullivan, M. (2005). Relations between coping strategies and health-related quality of life in patients with spinal cord lesion. *Journal of Rehabilitation Medicine. 37*, 9-16.

Gilbert, D. T., Pinel, E. C., Wilson, T. D., Blumberg, S. L., & Wheatley, T. P. (1998). Immune neglect: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology. 75 (3)*, 617-638.

Hurst, N. P., Jobanputra, P., Hunter, M., Lambert, M., Lochhead, A., & Brown, H. (1994). Validity of EuroQol – a generic health status instrument – in patients with Rheumatoid Arthritis. *British Journal of Rheumatology. (33)*, 655-662.

Lacey, H. P., Fagerlin, A., Loewenstein, G., Smith, D. M., Riis, J., & Ubel, P. A. (2008). Are they really that happy? Exploring scale recalibration in estimates of well-being. *Health Psychology. 27 (6)*, 669-675.

Morewedge, C. K., Gilbert, D. T., & Wilson, T. D. (2005). The least likely of times: How remembering the past biases forecasts of the future. *Psychological Science. 16*, 626-630.

Riis, J., Loewenstein, G., Baron, J., Jepson, C., Fagerlin, A., & Ubel, P. A. (2005). Ignorance of hedonic adaptation to hemodialysis: A study using ecological momentary assessment. *Journal of Experimental Psychology: General. 134(1)*, 3-9.

Schrag, A., Jahanshahi, M., & Quinn, N. (2000). What contributes to quality of life in patients with Parkinson's disease? *Journal of Neurology, Neurosurgery, & Psychiatry. 69*, 308-312.

Schulz, R., & Decker, S. (1985). Long-term adjustment to physical disability: The role of social support, perceived control, and self-blame. *Journal of Personality & Social Psychology. 48*, 1162-1172.

Smith, D. M., Langa, K. M., Kabeto, M. U., & Ubel, P.A. (2005). Health, wealth, and happiness: Financial resources buffer subjective well-being after the onset of a disability. *Psychological Science. 16 (9)*, 663-666.

Smith, D. M., Sherriff, R. L., Damschroder, L., Loewenstein, G., & Ubel, P. A. (2006). Misremembering colostomies? Former patients give lower utility ratings than do current patients. *Health Psychology. 25 (6)*, 688-695.

Ubel, P. A., Loewenstein, G., Hershey, J., Baron, J., Mohr, T., Asch, D. A., et al. (2001). Do nonpatients underestimate the quality of life associated with chronic health conditions because of a focusing illusion? *Medical Decision Making. 21 (3)*, 190-199.

Ubel, P. A., Loewenstein, G., & Jepson, C. (2005). Disability and sunshine: Can hedonic predictions be improved by drawing attention to focusing illusions or emotional adaptation? *Journal of Experimental Psychology: Applied. 11(2)*, 111-123.

Walsh, E., & Ayton, P. (2009). What would it be like for you and for me? Judged impact of chronic health conditions on happiness. *Medical Decision Making. 29*, 15-22.

Walsh, E., & Ayton, P. (submitted). Health, wealth, and happiness: Is the focusing illusion responsible for biased affective forecasts. Unpublished manuscript.

Wilson, T. D., Wheatley, T., Meyers, J. M., Gilbert, D. T., & Axsom, D. (2000). Focalism: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology. 78 (5)*, 821-836.

5.7 Appendix 1

Table 5.2: Experimental conditions and respondent allocation

	Pre-tutorial		Post-tutorial	
	"Happiness"	"Average happiness"	"Happiness"	"Average happiness"
Condition 1	P1	-	-	P1
Condition 2	-	P2	-	P2
Condition 3	-	-	-	P3
Condition 4	-	-	P4	-

5.8 Appendix 2

Health State Descriptions

Multiple Sclerosis

Multiple sclerosis is a health condition which affects the nerve fibres in the central nervous system (the brain and spinal cord). These nerve fibres transmit messages that allow the brain to control the body. MS causes the body's immune system to attack a part of these nerve fibres which causes damage not only to the nerve fibres themselves but also to the messages they carry. There are many symptoms associated with MS and they can last from hours to months. The symptoms can include: changes in sensation; muscle spasm; pain; depression; severe fatigue; speech difficulties; cognitive impairment; difficulties with mobility and co-ordination; and problems with vision. People can experience a few or many of these symptoms, and in severe cases MS can cause mobility impairment and disability. Some symptoms can be managed with drugs and complementary therapies but others are less easy to manage. MS is the most common neurological disease to affect young adults in the western world, and affects around 85,000 people in the UK a year. The cause of the condition is unknown and there is no cure.

Parkinson's disease

Parkinson's disease is a progressive neurological condition, caused by the loss of nerve cells in the brain which results in the impairment of the co-ordination of movement. The symptoms of Parkinson's can include; tremors in the hands or arms

which typically occur when the hand/arm is not being used and decrease once it is in use; slowness of movement such as taking longer to initiate or perform movement; muscle rigidity or stiffness; fatigue; depression; difficulties with speech and balance. The symptoms normally begin slowly and then gradually develop. As Parkinson's is an individual condition, the speed at which the condition progresses and the severity of the symptoms is different for each person. There are drugs and treatments, such as physiotherapy and speech and language therapy, to improve quality of life but there is no cure for the condition.

Crohn's disease

Crohn's disease is a chronic inflammatory condition where typically the colon or areas in the lower part of the intestine become inflamed. This inflammation causes these areas to become swollen and ulcers can occur. Symptoms can include pain in the abdomen, fever, urgent diarrhoea, fatigue and loss of weight. The symptoms can vary between people and as Crohn's is a relapsing condition the severity of the symptoms is unpredictable and can change over time. Drugs and steroids are used to control the symptoms but surgery may be needed to remove the affected area if it becomes too damaged. The cause of the condition is unknown and there is no cure.

5.9 Appendix 3

Tutorial on Distributions

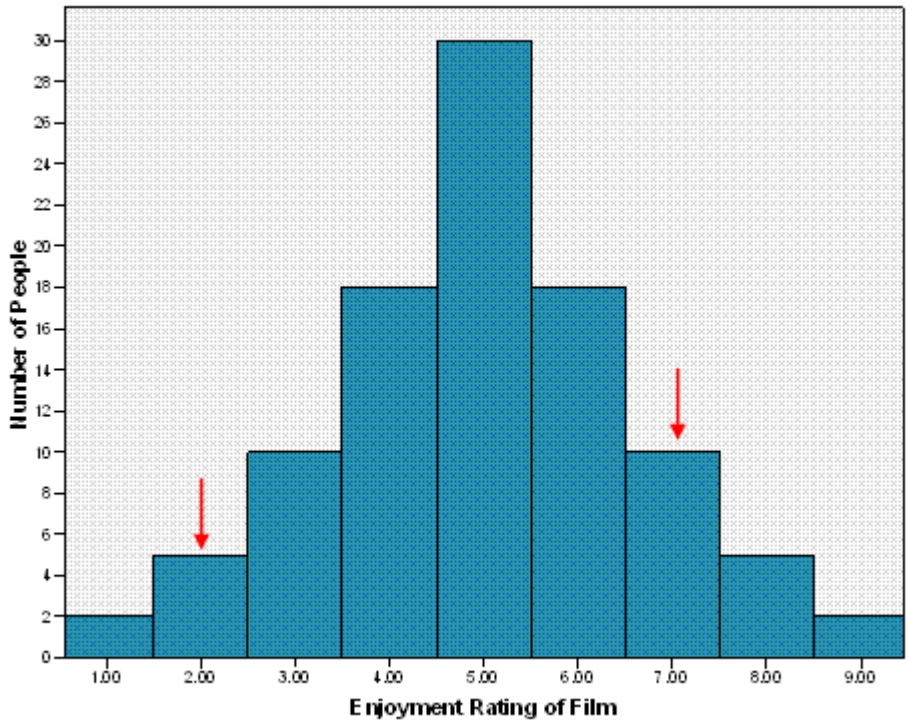
Screen 1:

Let's imagine that we asked a group of 100 people to rate how much they enjoyed watching a film. They rated their enjoyment on a 1-9 scale where 1 meant "Not Enjoying" and 9 meant "Enjoying A Lot".

The **average** enjoyment rating is calculated by adding together all of the enjoyment ratings and dividing the total by the number of people in the group (100). Let's imagine that in this example the average enjoyment rating was 5.

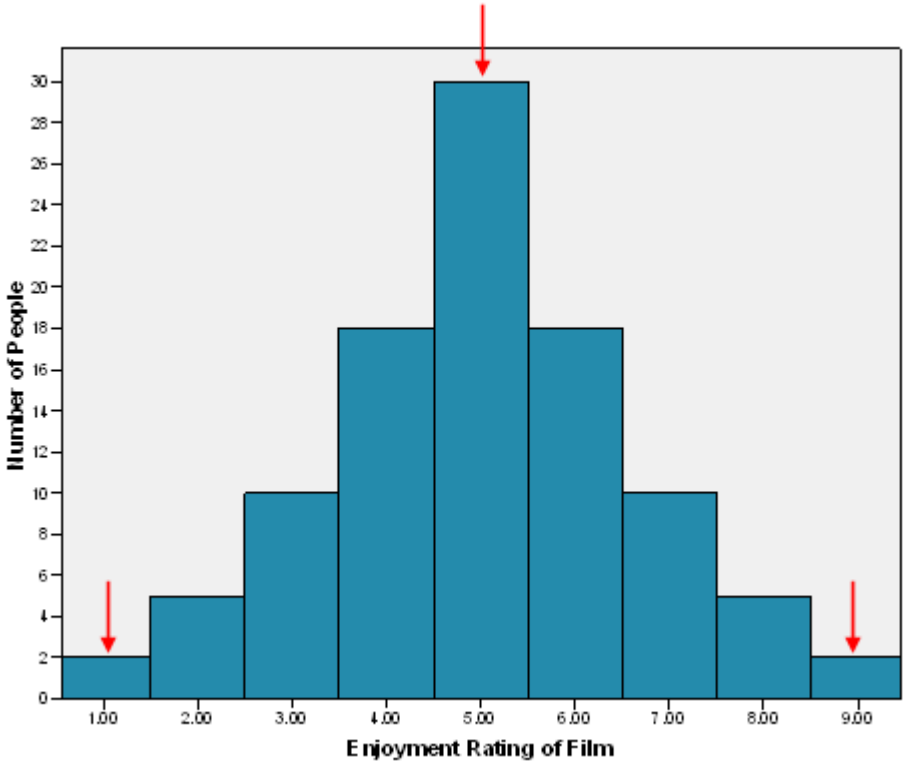
Screen 2:

If we looked at the enjoyment ratings of the group on a graph, it would look like the following:



Each of the vertical bars on the graph represents the number of people who made that enjoyment rating. So you can see that two people rated their enjoyment as 1 whereas ten people rated their enjoyment as 7. If we added together all of the bars on the graph, we would get a total of 100 people (the number of people in the group).

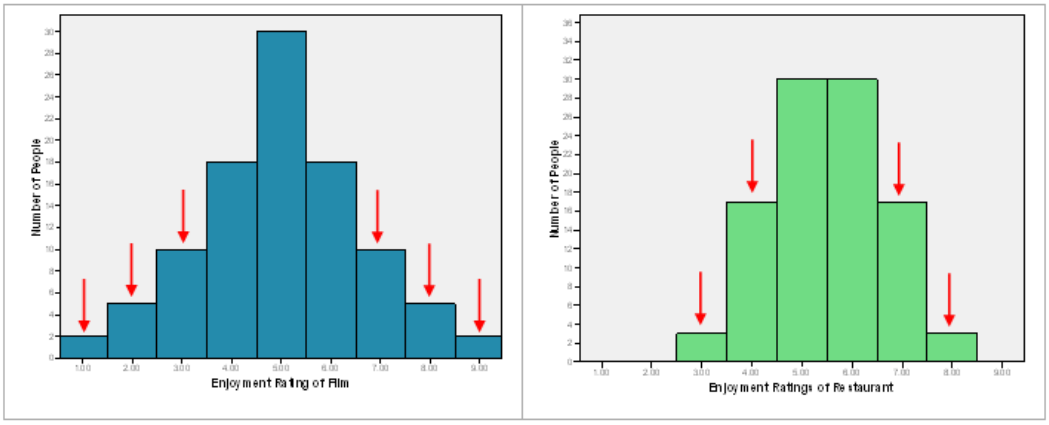
Screen 3:



You can see that the ratings are spread over the whole scale and by looking at the different sizes of the bars you can see which ratings are more common. Most of the group rated their enjoyment around the average enjoyment rating of 5, and very few people rated their enjoyment at the extremes of the scale (ratings of 1 or 9).

Screen 4:

It is interesting to look at where these extreme ratings fall on the scale. In other words, where did the ten people who enjoyed the film the most (the 10% of the group who had high enjoyment ratings) and the ten people who enjoyed the film the least (the 10% of people who had low enjoyment ratings) rate their enjoyment to be?



Look at the blue graph on the left. By adding up the bars on the left hand side of the graph, you can see that two people rated their enjoyment as 1, while five people rated their enjoyment as 2, and ten people rated their enjoyment as 3. This means that the ten people (or 10%) who enjoyed the film the least rated their enjoyment between 3 and 1 on the scale.

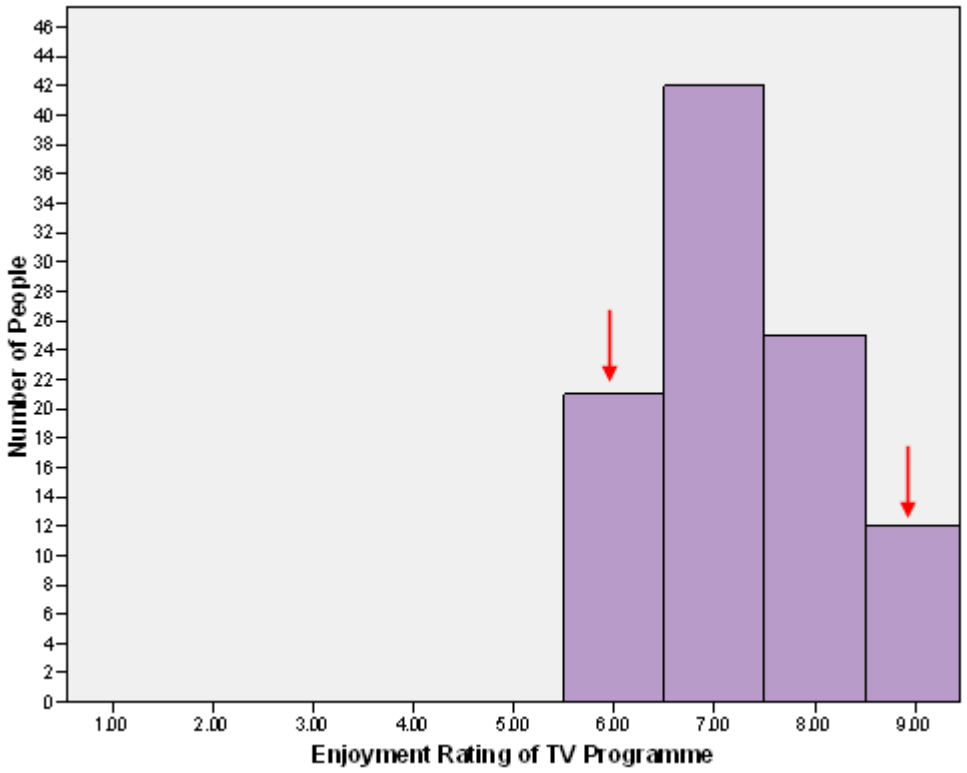
By adding up the bars on the right hand side of the graph, you can see that two people rated their enjoyment as 9, five people rated their enjoyment as 8, and ten people rated their enjoyment as 7. This means that the ten people (or 10%) who enjoyed the film the most rated their enjoyment between 7 and 9 on the scale.

Let's imagine another group of 100 people who rated their enjoyment of a restaurant – look at the green graph on the right. You can see that the ten people (10%) who

enjoyed the restaurant the most gave ratings between 7 and 8 whereas the ten people (10%) who enjoyed the restaurant the least gave ratings between 4 and 3.

Screen 5:

Sometimes ratings can be grouped together over a narrow part of the scale. Look at the graph of a group of 100 people who rated their enjoyment of a TV Programme.



The average enjoyment rating of this group is 7.3. The 10% of people who enjoyed the programme the most gave ratings of 9 whereas the 10% of people who enjoyed the programme the least gave ratings of 6.

Chapter 6: My Imagination vs. Your Feelings: Can Personal Affective Forecasts Be Improved By Knowing Other Peoples' Emotions?

My Imagination vs. Your Feelings: Can Personal Affective Forecasts Be Improved By Knowing Other Peoples' Emotions?

Emma Walsh & Peter Ayton

City University, London UK

Emma Walsh & Peter Ayton, Department of Psychology, City University.

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Correspondence concerning this article should be address to Emma Walsh, City University – Department of Psychology, Northampton Square, London, EC1V 0HB, UK. Email: e.l.walsh@city.ac.uk

6.1 Abstract

A proposed remedy for biased affective forecasts is to base judgments on the actual feelings of people (surrogates) currently experiencing the event, rather than using imagination which conjures an inaccurate vision of the future. Gilbert et al. (2009) forced people to use surrogate reports by withholding all event information, resulting in better predictions. However, in life surrogate information rarely supplants event information - can people effectively integrate both types of information into their judgments? In 5 studies, respondents predicted the impact of a health state on their own happiness. Respondents incorporated surrogate information into their judgments both in the presence and absence of event information. However, they inappropriately discounted other people's experiences as a valid predictor of their own - particularly in the presence of event information – and imagined their happiness would be different to surrogates' happiness. Excluding pre-existing event knowledge, changing the size of the surrogate sample, or increasing the size of the response scale, did not alter the adjustment. Although surrogate information improved affective forecasts, its influence was diminished by the presence of event information.

Key words: affective forecasting, surrogation, impact bias, health state

6.2 Introduction

The conclusion that people predict their future emotions inaccurately - by overestimating both the intensity and duration of their emotional response to an event - is clearly demonstrated in a range of empirical studies (Dunn, Wilson, & Gilbert, 2004; Gilbert, Driver-Linn, & Wilson, 2002; Ubel et al., 2001). This effect, known as the *impact bias,* has been shown for a wide-range of events, from mis-predicting the impact of winning a football match (Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000), to electoral defeat (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998), to failing a driving test (Ayton, Pott, & Elwakili, 2007). The impact bias has also been measured for more consequential events, such as the influence of chronic health states on well-being: people overestimate the impact of a variety of health states on both their own happiness as well as other peoples' happiness (Walsh & Ayton, 2009) despite there actually being little variation in the happiness of people living with or without chronic health states (Brickman, Coates, & Janoff-Bulman, 1978; Walsh & Ayton, 2009). This leads to a discrepancy between non-patients' predictions and patients' actual experiences (Hurst et al., 1994; Riis et al., 2005). Any discrepancy between anticipated and experienced outcomes will lead to suboptimal decisions (Sevdalis & Harvey, 2007) which, in a medical context could have serious long-term consequences.

Why do we persistently make these errors in our affective forecasts? Several explanations suggest that we do not accurately *imagine* the future event. One proposal, known as the *focusing illusion,* suggests that people incorrectly focus on the target event and disregard other events which could also impact and moderate their future emotions, resulting in extreme forecasts (Kahneman, Krueger, Schkade, Schwarz, &

Stone, 2006; Schkade & Kahneman, 1998; Wilson et al., 2000). A further proposed error with the imagination process is that people fail to imagine that they would adapt to the future event, a process of *unforeseen adaptation* (Gilbert et al., 1998). They imagine their immediate affective reaction and fail to take into consideration that over time their reaction to the event would diminish and they would return to their baseline emotional state.

If we can not accurately imagine our reaction to a future event, how about recalling memories of our past experiences as a guide to predicting our future happiness? Studies have shown that not only can we not accurately remember how we felt (Wirtz, Kruger, Scallon, & Diener, 2003) but that we also tend to recall atypical instances of the event, thereby biasing our future predictions (Kahneman, Fredrickson, Schreiber, & Redelmeier, 1993; Morewedge, Gilbert, & Wilson, 2005).

It would therefore seem that our imaginations, and our memories, lead us down the garden path when it comes to anticipating our future emotions. Furthermore, endeavours to reduce the impact of these effects on predictions have produced mixed results. Ubel, Loewenstein, and Jepson (2005) compared different methods designed either to reduce the impact of the focusing illusion or of unforeseen adaptation. They found that exercises designed to reduce the focusing illusion had limited effect (a finding consistent with Baron et al., 2003; Ubel et al., 2001; and Walsh & Ayton, 2009). However, exercises which drew attention to the process of adaptation successfully reduced the bias, leading Ubel et al. (2005) to conclude that unforeseen adaptation was a more appropriate explanation for the impact bias shown for health states.

Another proposed remedy to overcome the failings in our imagination is to disregard imagination entirely and instead base judgments on the actual feelings of people currently experiencing the event - a process termed *surrogation* (Gilbert, 2006). When people are denied the information that imagination requires to make a future prediction, and are only given information about the feelings of others', they make more accurate forecasts. Gilbert, Killingsworth, Eyre, and Wilson (2009) demonstrated that women more accurately predicted their enjoyment of a speed-date when they were provided with the enjoyment ratings of another woman who had experienced that date (surrogate information), than when provided with profile information about the date (event information). This was despite 75% of respondents believing that receiving event information would lead them to more accurate forecasts than receiving surrogate information.

Similarly, Norwick, Gilbert, and Wilson (2006) recorded how a group of people felt after they had received a prize and then taken part in a tedious task. A second group was informed that they would also receive the prize and participate in the task, but half of the respondents were told what the prize was and the other half were given the reported feelings of a member of the first group. Respondents who only knew what the prize was did not accurately predict their future feelings; arguably because they had used their imaginations to envisage receiving the prize but had failed to anticipate how the tedious task would make them feel. In contrast, respondents who could only base their judgments on the reported feelings of a member of the previous group made accurate forecasts: although they had no information about the future event, by basing

their judgments on the experiences of the surrogates they correctly anticipated their future feelings.

These findings suggest that for people to accurately predict their future happiness, they should not contemplate information about the future event – thereby disabling their imaginations - and instead base their judgments on the feelings of others. Although a fitting suggestion in theory, it will, arguably, not often be feasible in practice. Outside of the laboratory, when making predictions about the impact of a future event, people rarely know how that event is making someone else feel without at the same time knowing something about the event itself. For example, we can read reports of how much critics enjoyed a movie but also know who stars in the film, or we can read reviews of hotels but see pictures of its location, making it difficult to separate event information and surrogate information when making our predictions. While it might be possible to withhold event information under some circumstances (e.g. one might not tell a child that their sandwich contained some ingredient they professed repugnance of) it is difficult to see how information could be practically and ethically withheld in more consequential cases. For example when contemplating the impact of a health state on happiness; it is highly doubtful that people could be told about the happiness of surrogates without some information about the health state also being disclosed. Even if all that people knew was the name of the health state, this might still be enough to enable their imaginations to bias their judgments. Gilbert et al. (2009, p.1619) conceded that "…people may be reluctant to engage in surrogation if they have the opportunity to do otherwise". For the surrogacy proposal to provide an effective panacea for the bias in judgments, an important issue is whether people incorporate

surrogate information into their judgments when presented alongside event information, as well as when presented on its own.

A potential limitation of surrogate information as a guide to personal happiness is that its value may be downplayed because people believe they are different to others (Kruger, 1999). Most people believe themselves more likely than the average person to be a better driver or live past 70 years; and less likely than the average person to own an airplane or get lung cancer (Kruger & Burrus, 2004; Svenson, 1981; Weinstein, 1980). Furthermore they think that life events would affect them in a different way to how they affect others: people predict that their own happiness would be more affected by a health state than other people's happiness would be (Walsh & Ayton, 2009). Gilbert (2006) proposed that when given the choice people would prefer to receive event information to surrogate information precisely because they believe they are different to the surrogates. Moreover, as reported above, Gilbert et al. (2009) found that most of their respondents believed that event information would be more useful than surrogate information. Therefore if presented with both types of information, it follows that people may discount the happiness of other people as a guide to their own happiness and use the event information to imagine how life would be different for them.

The aim of the following five studies was to explore whether people contemplating the impact of a health state incorporate information about others' happiness into their judgments. In particular, how do people respond when they are presented with *both* surrogate information *and* health state information? Do they realise the value of surrogate information or do they prefer to use their imaginations and base

their judgments on the health state information? Does varying the degree to which surrogate information matches expectations affect the extent to which it is used? Is surrogate information used differently when predictions are being made for self-happiness, or the happiness of someone else? In all 5 studies, respondents were asked to imagine that they had just been diagnosed with a health state and to predict what their happiness would be after living with that health state for 1 year. It was predicted that respondents would fail to realise the value of other peoples' feelings and disregard the surrogate information, particularly when presented alongside health state information, in favour of their imaginations.

6.3 Study 1: Using Others' Happiness to Predict Self Happiness

The aim of this study was to explore the predicted impact on happiness of living with a chronic health state (kidney disease) for 1 year, after being presented with either surrogate information, health state information, or both surrogate information and health state information. The surrogate information presented was a happiness rating of 6.5 on a scale ranging from 1 (*not happy*) to 9 (*very happy*). This was the self-reported average happiness rating of a sample of 10 people living with kidney disease taken from Walsh and Ayton (2009). As non-patients overestimate the impact on happiness of living with a health state, we expected that this surrogate information would have seemed surprisingly high on the happiness scale to the respondents. Nonetheless it was predicted that respondents presented with only surrogate information would make more accurate predictions (i.e. closer to the surrogate value) than respondents presented with only health state information, or both surrogate information and health state information.

The accuracy of predictions was assessed indirectly because respondents did not actually experience the health state. Instead a cross-sectional design was used where respondents' predictions were compared with the experiences of others. This design has several advantages over a longitudinal design as it allows us to test the predicted impact of a rare event, such as a health state; it avoids any issues with re-interpretation of the scale which can occur once people have experienced an event; and it avoids any anchoring or priming on previous predictions (Loewenstein & Schkade, 1999). Therefore, in this study, the surrogate value has a special status because it is our best estimate of what the respondents' happiness would actually be if they were experiencing the health state we are asking them to consider. Gilbert et al.'s (2009) and Norwick et al.'s (2006) studies established that, for the cases they examined, surrogate reports were indeed good predictors of their respondents' actual affective states. Of course, the logic of the surrogacy proposal for *generally* improving affective forecasts is that surrogate experiences are, in general, good predictors of other people's experiences. Accordingly our assumption is that we can use this surrogate value to benchmark the accuracy of affective forecasts.

6.3.1 Method

6.3.1.1 Design

There were 3 independent-samples conditions (only surrogate information, only health state information, surrogate and health state information). The dependent variable was happiness rating on a scale from 1 (*not happy*) to 9 (*very happy*). Respondents, randomly allocated to a condition, rated on the scale their current

happiness, their predicted immediate happiness just after the described scenario, and their predicted happiness 1 year after the scenario.

6.3.1.2 Participants

639 respondents took part in the study, 73% of which were female. Age ranged from 18 to 58 years with a mean age of 21 years. Respondents were recruited via emails sent to UK university degree administrators (of varying subjects), who forwarded the invitation on to staff (n = 3) and students (n = 636). For completing the questionnaire, respondents were offered the opportunity to take part in a prize draw to win £20 of online store vouchers.

6.3.1.3 Procedure

Respondents completed the questionnaire over the Internet. They indicated their gender, age, and rated their current happiness at the start or end of the questionnaire, and then read one of the following scenarios (information in brackets was removed for respondents not receiving surrogate information):

> *Health state information (and surrogate information) scenario:* [2]
>
> Imagine you are being told by your doctor that you have developed kidney disease. In order to explain the likely impact of the condition, (the doctor tells you that a random sample of 10 people who have been living with kidney disease for at least 1 year report an average happiness of 6.5 on the 1-not happy to 9-very happy scale.) The doctor informs you that this is a condition in which

[2] Amount of detail provided about the health state was explored but as no significant effects were found of this manipulation, data are reported collapsed into one group.

there are abnormalities in your kidneys. This has resulted in kidney failure and you will need to be treated with dialysis, a process which typically involves you being connected via tubes to an artificial kidney machine to remove the waste products from your blood stream. You will need to receive dialysis either in a hospital for approximately 4 hours every 3 days a week, or at home for approximately 1 hour every day. You are informed that this treatment is not a cure and therefore dialysis will be required for your lifetime, or until you are eligible for a kidney transplant. Before the doctor can discuss this further a nurse comes into the room to ask a question about another patient.

Only surrogate information scenario:

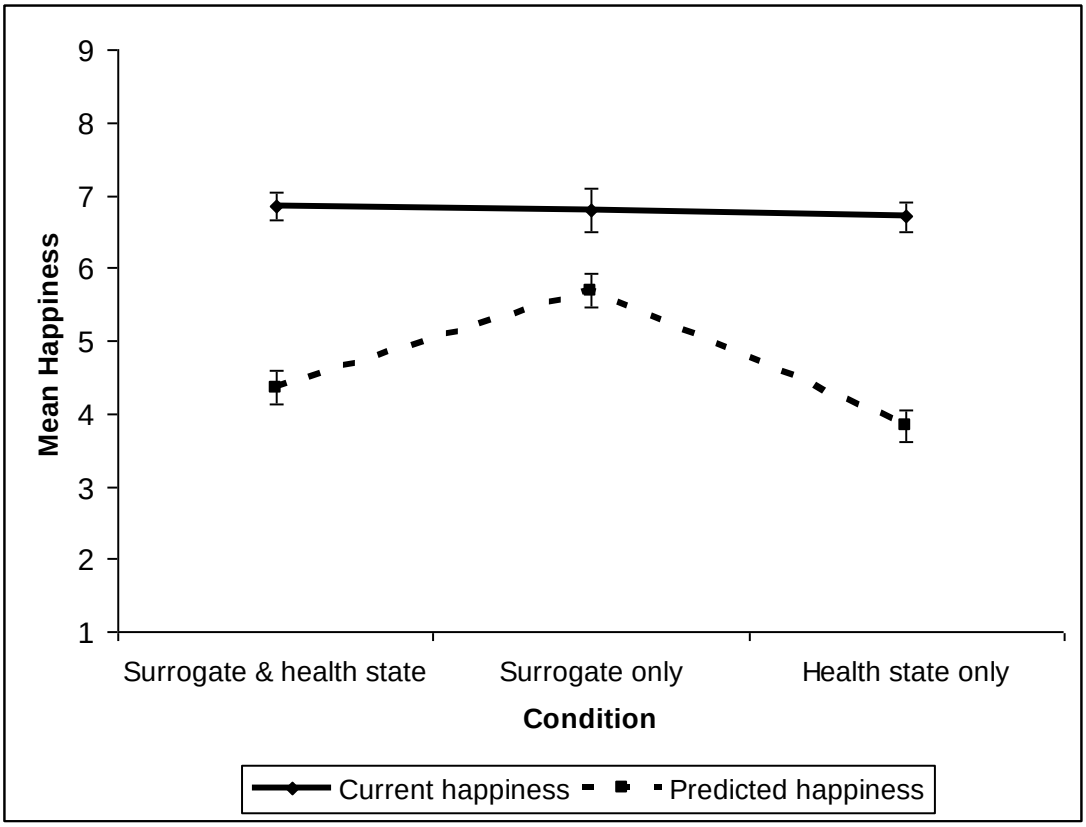
Imagine you are being told by your doctor that you have developed a medical condition. In order to explain the likely impact of the condition, the doctor tells you that a random sample of 10 people who have been living with this condition for at least 1 year report an average happiness of 6.5 on the 1-not happy to 9-very happy scale. Before the doctor can discuss this further a nurse comes into the room to ask a question about another patient.

All respondents then predicted at that moment, how happy they would expect to be (a filler question to assist respondents in differentiating between their immediate reaction to diagnosis and their more long-term reaction), and how happy they would expect to be 1 year after living with the medical condition (the target question). Finally all respondents indicated whether they or someone close to them was living with kidney disease.

6.3.2 Results

Forty-eight respondents indicated that they or someone close to them was living with kidney disease and therefore their data were excluded from the analyses, leaving complete data for 591 respondents. Analyses revealed that rating current happiness before or after reading the scenario did not significantly affect respondents' predictions; therefore data are collapsed across this variable. All of the subsequent effect sizes are based on Cohen (1988) and assume a small effect = .10, medium effect = .30, and a large effect = .50.

Did respondents predict that their happiness 1 year after living with Kidney Disease would be different from their current happiness? A 2 (happiness: current, predicted) x 3 (condition: only surrogate information, only health state information, surrogate and health state information) mixed ANOVA revealed that respondents predicted a significant decrease in their happiness 1 year after living with kidney disease, $F(1, 588) = 652.55$, $p < 0.01$, $r = 0.73$ (see figure 6.1). There was also a significant interaction, $F(2, 588) = 33.80$, $p < 0.01$; although respondents' current happiness ratings did not differ across the 3 conditions, $F(2, 588) = 0.43$, $p = 0.65$, there were significant differences in respondents' predictions, $F(2, 588) = 53.06$, $p < 0.01$, $r = 0.30$ (see table 6.1). Tukey post-hoc tests revealed that respondents presented with surrogate and health state information made significantly higher (more happy) predictions than those presented with only health state information ($p < 0.01$). Furthermore, respondents who received only surrogate information made significantly higher predictions than those with surrogate and health state information ($p < 0.01$), and those presented with only health state information ($p < 0.01$).



Note: Surrogate information was 6.5 on a 1 (*not happy*) to 9 (*very happy*) scale. Current happiness and predicted happiness were rated on the same scale. Error bars represent 95% confidence intervals.

Figure 6.1: The interaction between happiness rating and condition (study 1)

Despite the judgments of respondents who received only surrogate information being the happiest, were their predictions as to their future happiness similar to the surrogate rating of 6.5 that they were given? A one-sample t-test compared their predictions with the surrogate rating of 6.5 and revealed that there was a significant difference between how happy they predicted they would be and the reported happiness of the surrogates, $t(122) = -6.87$, $p < 0.01$, $r = 0.53$. Respondents presented

with only surrogate information predicted that they would be significantly less happy 1 year after living with kidney disease than the surrogates reported.

Table 6.1: Mean (and standard deviation) predicted happiness 1 year after living with kidney disease

Condition	Predicted Happiness
Only surrogate information	5.69 (1.31)
Only health state information	3.83 (1.72)
Surrogate and health state information	4.36 (1.70)

Note: Surrogate information was 6.5 on a 1 (*not happy*) to 9 (*very happy*) scale. Predicted happiness was rated on the same scale.

6.3.3 Discussion

Surrogate information improved affective forecasts both in the presence and absence of health state information. Respondents presented with only surrogate information integrated it into their judgments to make significantly more accurate predictions (i.e. predictions closer to the surrogate value) than those given only health state information, replicating previous findings (Gilbert et al., 2009). In fact, they made significantly more accurate predictions than respondents presented with any health state information. When presented with surrogate and health state information, respondents used both types of information to make their predictions. We can infer this because they made significantly more accurate predictions than respondents presented

with only health state information and they made significantly less accurate predictions than respondents presented with only surrogate information.

However people did not make as accurate predictions as they could have done because they discounted the surrogate information somewhat, even when it was the only information presented. Moreover they discounted surrogate information more in the presence of health state information - people used their imaginations to moderate predictions of their future happiness rather than realising the value of other peoples' feelings – highlighting a problem in situations where event information can not be easily withheld. However, we should reiterate that our assessments of the accuracy of respondents' predictions were assessed indirectly: since respondents could not be "given" the health state it was not possible to compare their predictions with their own experiences. Nonetheless, as the surrogate value was the actual happiness of people living with kidney disease, and we have no grounds to believe that our respondents would experience this condition any differently to the surrogate sample, we have used it as a benchmark to estimate what our respondents' happiness would actually be.

Why did respondents discount the surrogate value? Given that respondents' average self-rated current happiness was 6.8, it may well be that the surrogate value of 6.5 was judged implausibly high. If respondents were sceptical that people with kidney disease could be almost as happy as themselves, this may have dissuaded them from using the surrogate rating. Even respondents who believed that other people with kidney disease were as happy as 6.5 might judge that they themselves would not be so happy – in effect treating themselves as a special case. In any event, if presented with a lower surrogate value, respondents might be expected to discount it less.

6.4 Study 2 – Using Surrogates' Happiness to Predict Self/Other Happiness

This study had two main aims: The first was to see how respondents respond when presented with a lower surrogate value. As people tend to overestimate the impact of health states on happiness, a much lower surrogate happiness value would have been more consistent with their subjective opinion, and therefore we expect respondents would have less reason to discount this value. Accordingly, we presented respondents with the surrogate value of 2.5 on the 1-9 scale. This value is lower than the predictions of respondents who received only health state information in study 1, and therefore we would expect respondents who received this surrogate value to make lower predictions than those who received only health state information. Secondly, as there is evidence that people evaluate the impact of health states on their own happiness differently to that of other people's happiness (Baron, et al., 2003; Walsh & Ayton, 2009), the second aim was to examine whether surrogate information influenced predictions differently depending on whether respondents were predicting their own happiness or the happiness of others. While people might discount surrogate information because they believe it doesn't apply to them for some idiosyncratic reason, they might have less reason to discount it when considering the impact of health states for others.

6.4.1 Method

6.4.1.1 Design

There were 3 independent-samples conditions (only surrogate information, only health state information, surrogate and health state information) and all respondents

made predictions from 2 viewpoints (self, other), except for the only health state information condition where only judgments for others' happiness were collected. Participants in the only health state information condition did not make judgments for self happiness because this data had been collected in study 1 from a similar participant sample using the same study design, and therefore we felt it would be an unnecessary replication. The dependent variable was as per study 1.

6.4.1.2 Participants

Respondents were recruited and incentivised via the same methods as study 1 from Australian and UK universities (respondents were not recruited from the same universities who had been contacted previously). 265 respondents took part in the study (11 staff and 254 students), 84% of which were female. Age ranged from 18 to 60 years with a mean of 24 years.

6.4.1.3 Procedure

The procedure was the same as Study 1 except that before being presented with the scenario, respondents were told to imagine that either themselves or someone close to them was experiencing the event (this order was counterbalanced for respondents predicting both viewpoints), and to indicate from a list the person they were imagining e.g. partner. This information was then automatically inserted into the scenario to facilitate considering the scenario from someone else's viewpoint, e.g. "imagine your partner is being told by their doctor…". Once they had made their predictions the scenario was presented from the alternate viewpoint.

6.4.2 Results

11 respondents indicated that they or someone close to them was living with kidney disease and therefore their data were excluded from the analyses, leaving complete data for 254 respondents.

Table 6.2: Mean (and standard deviation) predicted happiness 1 year after living with kidney disease

Condition	Viewpoint	Predicted Happiness
	Self	3.20 (1.42)
	Other	3.17 (1.55)
	Self	3.36 (1.71)
	Other	3.05 (1.57)
	Self	3.83 (1.72)[a]
	Other	3.09 (1.64)

Note: Surrogate information was 2.5 on a 1 (*not happy*) to 9 (*very happy*) scale. Predicted happiness was rated on the same scale. [a]Data from study 1.

An independent-samples t-test comparing self-happiness predictions by respondents who received only surrogate information or surrogate and health state information, revealed no significant difference, $t(150) = 0.54$, $p = 0.59$. However, when the self-happiness predictions of respondents who received only health state information in study 1 were included in this analysis as a third condition, there was a significant difference, $F(2, 387) = 4.54$, $p = 0.01$, $r = 0.15$. Respondents in study 1 who

received only health state information made happier predictions than respondents in study 2 who received only surrogate information ($p = 0.05$) or surrogate and health state information ($p = 0.05$) (see table 6.2).

Given that in this study the surrogate information was fabricated, we cannot use it in the same way as we used the surrogate value in study 1 to benchmark accuracy. Nevertheless, the same procedure used in study 1 to determine the accuracy of predictions can also be used in this study to determine the degree to which respondents incorporated surrogate information into their judgments when it was the only information they were presented with. The predictions of respondents presented with only surrogate information were compared to the surrogate value of 2.5. In contrast to respondents in study 1 who received only surrogate information of 6.5 and predicted they would be less happy, respondents in study 2 presented with only surrogate information of 2.5 predicted that they would be significantly *happier* than the surrogate value 1 year after living with kidney disease, $t(46) = 3.40$, $p < 0.01$, $r = 0.45$.

Did respondents make different predictions about their own happiness versus the happiness of someone close to them? Analysis exploring the self/other predictions of respondents who received only surrogate information or surrogate and health state information revealed no significant main effects or interactions[3]. In contrast, for those who received only health state information, an independent samples t-test revealed a significant difference between study 1 respondents who predicted for self and study 2

[3] Analyses revealed that self/other predictions did not depend on the order in which these questions were asked so all subsequent analyses were collapsed across this variable.

respondents who predicted for other; predictions for other's happiness were significantly lower than predictions for self happiness, $t(338) = 3.69$, $p < 0.01$, $r = 0.20$.

6.4.3 Discussion

The results of study 2 confirm that people do incorporate surrogate information into their thinking when making their predictions. Respondents who received surrogate information of 2.5 either on its own or alongside health state information made significantly lower predictions than respondents who received only health state information.

Nonetheless some discounting of surrogate information still occurred even when it was the only information respondents received. Study 1 respondents who received only surrogate information of 6.5 predicted they would be less happy than the surrogates, whereas study 2 respondents who received only surrogate information of 2.5 predicted that they would be happier than the surrogates, indicating that surrogate information was not the only consideration that respondents were basing their judgments on. The change in prediction direction depending on the surrogate value may be due to scale effects: noise in respondents' judgments could result in truncation of responses producing positive bias for lower scale points and a negative bias for higher scale points (cf. Juslin, Olsson, & Björkman, 1997). Conceivably it could also reflect a tendency for people to think they would cope better with events that have a large impact on other people (when surrogates report happiness of 2.5) and worse for events that have a minimal impact on other people (when surrogates report happiness of 6.5). If so however the direction of these predictions is somewhat surprising when compared with other findings (Kruger, 1999; Walsh & Ayton, 2009) showing that

people tend to think they would do better than others on easy tasks and chronic health states they have adapted to, but worse than others on difficult tasks and chronic health states they have not actually experienced. The present finding can be distinguished from these other reports however as respondents here were presented with surrogate values rather than being asked to imagine them.

No distinction was observed in how respondents reacted to surrogate information when they judged the impact of kidney disease on themselves or on another. These results are somewhat surprising if one expects that respondents would be more likely to consider themselves a special case – different to surrogates - than others. However this may have occurred because we asked respondents to rate the impact of kidney disease not simply on a random other but on someone close to them which may have induced a more empathic judgment.

Studies 1 and 2 show that respondents incorporated surrogate information with health state information to make higher or lower predictions (depending on the surrogate value) than in the absence of surrogate information. However, even in the absence of health state information (other than the fact it was a health state), people discounted surrogate information and used their imaginations to predict their future happiness instead of substituting the value indicating peoples' feelings. Respondents discounting of surrogate information in the presence of health state information could be due to health state information presented in the experiment but could also be because of pre-existing knowledge they had about the health state. Aside from the presented information, it is plausible that respondents had some knowledge and even vivid misconceptions of kidney disease which they might perceive as conflicting with

the surrogate value, and accordingly convince them that the surrogate values were not a good guide to their own happiness. The purpose of study 3 was to control for pre-existing knowledge about the health state by using a health state that respondents could not know anything about.

6.5 Study 3: Removing the Influence of Pre-existing Health State Knowledge

The aim of this experiment was to investigate whether respondents would discount surrogate information less and incorporate it more into their judgments when predicting the impact of a health state for which they had no pre-existing knowledge. Accordingly we invented an imaginary health state - piciloma. As respondents would only be able to base their judgments on presented information, any influence of health state information on forecasts would be attributable to the information provided and not any preconceptions they brought to the experiment. In this study respondents were presented with one of 3 surrogate values – 3, 5 or 7 on a 1-9 scale of happiness - to explore the extent to which this influenced their use of this information.

6.5.1 Method

6.5.1.1 Design

This study had 3 independent-samples conditions (only surrogate information, only health state information, surrogate and health state information). Respondents presented with surrogate information received a surrogate value of 3, 5, or 7. The dependent variable was the same as in previous studies.

6.5.1.2 Participants

Respondents were recruited and incentivised as per study 1, except that occupation information was not collected. 489 respondents took part in the study, 71% of which were female. Age ranged from 18 to 60 years with a mean age of 21 years.

6.5.1.3 Procedure

The procedure was as for previous studies except that respondents completed a paper version of the questionnaire and predicted the impact of piciloma (a fictitious health state but respondents were unaware of this) and were told:

> Imagine you are being told by your doctor that you have developed piciloma. In order to explain the likely impact of the condition, (the doctor tells you that a random sample of 10 people who have been living with this condition for at least 1 year report an average happiness of X on the 1-not happy to 9-very happy scale). The doctor informs you that this is a medical condition which is caused by a virus. From time-to-time you will experience headaches, shivers, feeling cold, and will generally feel unwell. Treatment is with a tablet which you will need to take every time you experience these symptoms, but there is no cure for this condition. Before the doctor can discuss this further a nurse comes into the room to ask a question about another patient.

6.5.2 Results

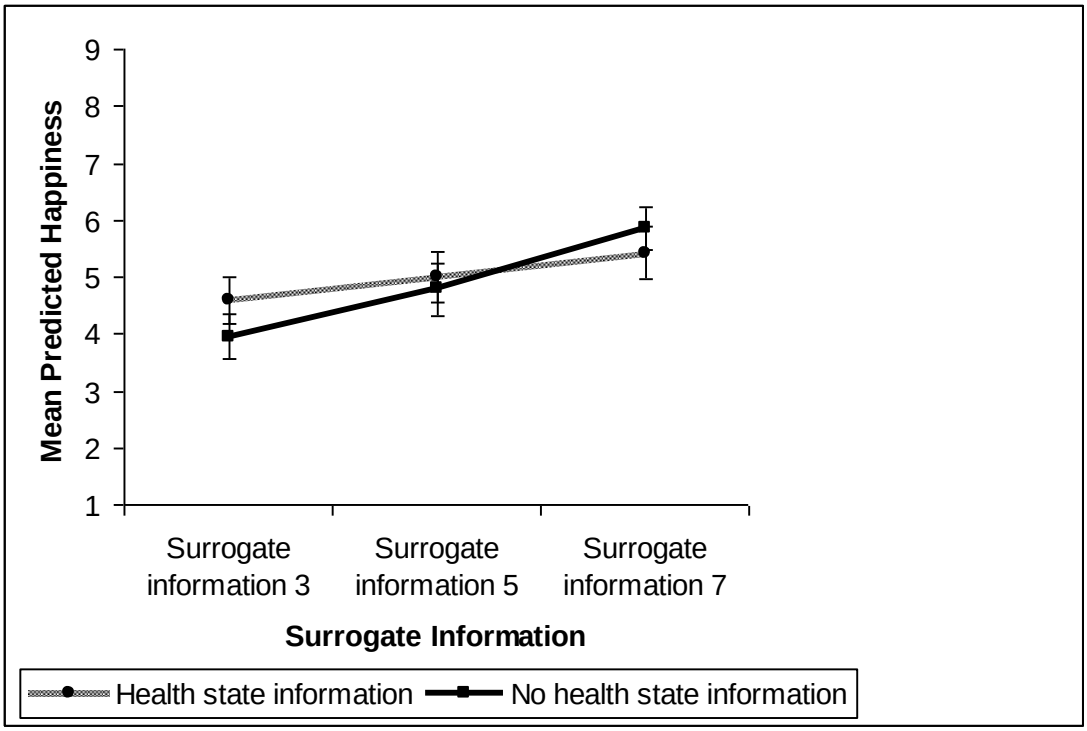
Table 6.3: Mean (and standard deviation) predicted happiness 1 year after living with health state, and percentage of happiness ratings less than (L), equal to (E), or greater than (G) surrogate value.

Surrogate information	Study 3 – surrogate sample 10 Health state information Yes	 No	Study 4 - surrogate sample 1000 Health state information No
3	4.59 (1.79) *L18%, E7%,G75%*	3.95 (1.71) *L20%, E22%, G58%*	4.01 (1.61) *L15%, E25%, G60%*
5	5.01 (1.99) *L40%, E17%, G43%*	4.78 (1.73) *L38%, E24%,G38%*	5.07 (1.42) *L36%, E26%, G38%*
7	5.42 (1.96) *L71%, E15%,G14%*	5.85 (1.62) *L65%, E22%. G13%*	5.97 (1.51) *L57%, E28%, G15%*
No surrogate information	4.49 (1.87)	-	-

Note: Surrogate values and predicted happiness were rated on a 1 (*not happy*) to 9 (*very happy*) scale.

A 3 (surrogate information: 3, 5, 7) x 2 (health state information: yes, no) independent-samples ANOVA revealed a significant main effect of surrogate information, $F(2, 415) = 20.90$, $p < 0.01$, $\omega = 0.29$; predicted happiness increased as the surrogate value increased (see table 6.3). There was no main effect of health state information, $F(1, 415) = 0.69$, $p = 0.41$, but there was a significant interaction, $F(2, 415) = 3.17$, $p = 0.04$, $\omega = 0.10$ (see figure 6.2) indicating that the variance in surrogate values influenced respondents with health state information less than those with no health state information. One-way ANOVAs indicated that varying surrogate information influenced respondents who received health state information, $F(2, 215) = 3.43$, $p = 0.03$, $\omega = 0.15$, and respondents who did not receive health state information, $F(2, 200) = 23.59$, $p < 0.01$, $\omega = 0.43$.

Three one-sample t-tests compared the degree to which respondents incorporated surrogate information into their predictions when it was the only information they received. Our analyses showed, as in studies 1 and 2, positive bias for lower surrogate values and negative bias for higher surrogate values; respondents who received surrogate information of 3 predicted that they would be significantly happier than the surrogates, $t(73) = 4.76$, $p < 0.01$, $r = 0.49$; respondents who received surrogate information of 7 predicted that they would be significantly less happy than the surrogates, $t(73) = -6.13$, $p < 0.01$, $r = 0.58$, and respondents who received surrogate information of 5 predicted no significant difference, $t(54) = -0.94$, $p = 0.35$.



Note: Surrogate values and predicted happiness were rated on a 1 (*not happy*) to 9 (*very happy*) scale. Error bars represent 95% confidence intervals.

Figure 6.2: The interaction between health state information and surrogate information (study 3)

6.5.3 Discussion

Predicted happiness increased as the surrogate value increased, indicating that respondents were using the surrogate information when predicting their future happiness. However respondents' forecasts were discrepant from the surrogate values indicating they thought they were different to others – even in the case where they had no information other than the surrogate values.

The influence of surrogate values on predictions was reduced when health state information was presented alongside surrogate information: respondents discounted the

surrogate value more in the presence of health state information than its absence. This was despite the fact that, due to the fictitious nature of the health state, they were only able to base their predictions on the information provided; excluding pre-existing health state knowledge still resulted in a discounting of surrogate information. Surrogate information was incorporated into affective forecasts but the extent to which it was used was reduced in the presence of other knowledge about the health state; this reduction cannot be attributed to the influence of any pre-existing knowledge of the event.

One reason why discounting of surrogate information occurred could be because respondents were sensitive to the distribution of scores of a population. Respondents may have discounted the mean happiness of ten surrogates because they considered it a small sample which could represent an extreme view within the distribution of people with that health condition. If so, increasing the surrogate sample size should lead to reduced discounting of the surrogate information.

6.6 Study 4: Increasing the Surrogate Sample Size

The aim of study 4 was to examine whether respondents were sensitive to the sample size of the surrogates by increasing the group size of the surrogates from 10 to 1000. Would respondents' discount surrogate information less when the size of the surrogate group was increased? The three independent-samples "only surrogate information" conditions from study 3 were rerun but this time the group size of the surrogates was changed to 1000.

6.6.1 Method

6.6.1.1 Participants

Respondents were recruited and incentivised as per previous studies. 261 respondents took part (3 staff and 258 students), 56% of which were female. Ages ranged from 18 to 46 years with a mean age of 21 years.

6.6.2 Results

Results from this study were compared to the only surrogate information conditions from study 3 (see table 6.3). A 2 (condition: surrogate 10, surrogate 1000) x 2 (surrogate information: 3, 5, 7) independent samples ANOVA revealed no main effect of condition, $F(1, 458) = 1.14$, $p = 0.29$, a significant main effect of surrogate information, $F(2, 458) = 59.10$, $p < 0.01$, $\omega = 0.66$, and no interaction $F(2, 458) = 0.19$, $p = 0.83$.

6.6.3 Discussion

Substantially increasing the size of the surrogate sample had no effect on the extent to which respondents incorporated the information into their predictions; discounting of surrogate values occurred to the same degree. Furthermore, examination of the percentages in table 6.3 reveals little change in the percentage of happiness ratings which were less than, equal to, or greater than the surrogate rating when the size of the surrogate sample was increased. This suggests that respondents were not disregarding the surrogate information because they were sensitive to the size of the surrogate sample.

An alternative candidate explanation as to why respondents discounted surrogate information, making forecasts that were higher than low surrogate values but lower than high surrogate values, is because of the proximity of the surrogate information to the endpoints of the scale. If we assume that respondents' judgments consist of a true score plus random error (cf. Thurstone, 1927) this could result in bias in responses when mapped onto a finite scale with endpoints; thus, error variance around judgments near the ends of the scale would be more constrained by the nearest endpoint in one direction but could vary more freely in the other direction. For cases where the added random error produced responses exceeding the scale values, truncation to the end points of the scale would result in positive bias for lower scale values and negative bias for higher scale values (cf. Juslin et al., 1997). Accordingly, the observed discounting of surrogate values could conceivably be due to noise in judgment rather than any underlying bias in judgment. To address this possibility we replicated study 4 using a scale which allowed more responses beyond the high and low surrogate values.

6.7 Study 5: Extending the Happiness Scale

The aim of this study was to explore whether respondents' tendency to discount surrogate values was due to constraints of the response scale. In this study the happiness response scale was increased to a 1-21 scale with the same endpoints of 1 (*not happy)* to 21 (*very happy*). The three independent samples conditions from study 4 were rerun but this time the surrogate information presented was 6, 11, or 16, to give respondents greater freedom to predict more extreme values than the surrogate value.

6.7.1 Method

6.7.1.1 Participants

Respondents were recruited and incentivised as per previous studies. 213 respondents took part (6 staff and 207 students), 65% of which were female. Ages ranged from 18 to 51 years with a mean age of 23 years.

6.7.2 Results and Discussion

Table 6.4: Mean (and standard deviation) predicted happiness 1 year after living with health state, and percentage of happiness ratings less than (L), equal to (E), or greater than (G) surrogate value

	No, health state information Surrogate sample 1000
Surrogate information 6	8.19 (3.65) *L19%, E19%, G62%*
Surrogate information 11	11.10 (3.67) *L41%, E13%, G46%*
Surrogate information 16	13.10 (4.18) *L62%, E19%, G19%*

Note: Surrogate values and predicted happiness were rated on a 1 (*not happy*) to 21 (*very happy*) scale.

We again observed that respondents' forecasts discounted extreme surrogate values. Three one-sample t-tests revealed that respondents who received the surrogate information of 6 predicted that they would be significantly happier than the surrogates, $t(71) = 5.10$, $p < 0.01$, $r = 0.52$; respondents who received the surrogate information of 11 predicted no difference in their happiness compared to the surrogates, $t(75) = 0.23$, $p = 0.82$; and respondents who received the surrogate information of 16 predicted that they would be significantly less happy than the surrogates, $t(64) = -5.60$, $p < 0.01$, $r = 0.57$ (see table 6.4).

The critical question for this study was whether increasing the scale to allow more extreme responses reduced the amount of discounting we observed. We analysed the number of responses that were above, below and equal to the surrogate value and compared it to the corresponding responses in study 4. A 3 (surrogate value: high, medium, low) x 3 (responses: greater than surrogate value, equal to surrogate value, less than surrogate value) x 2 (study: study 4, study 5) loglinear analysis showed that the surrogate value x response interaction, $\chi^2(4) = 80.77$, $p < 0.01$, did not vary between the two studies - the three-way interaction was not significant, $\chi^2(4) = 1.58$, $p = 0.81$. We conclude that the discounting of surrogate information is unlikely to be due to any artefact caused by scale end-point effects.

6.8 General Discussion

Our studies have shown that people incorporate knowledge about the happiness of others into their forecasts when predicting the impact of a health state on their own happiness. We also showed that when health state information was withheld, people increased their use of surrogate information as a basis for their predictions. This is

consistent with previous research (Gilbert et al., 2009; Norwick et al., 2006) and corroborative of Gilbert's (2006) claim that affective forecasts can be improved by withholding event information and providing only surrogate information.

Critically, from our perspective, the influence of surrogate information was reduced by the presence of event (health state) information; respondents incorporated surrogate information less into their predictions when presented with both types of information than when only presented with surrogate information. As we noted in the introduction, in many practical contexts it will be virtually impossible to exclude event information from people contemplating surrogate information, which, given its strong influence on judgment, places limits on the value of the surrogate information proposal. Despite this, when surrogate information was available together with event information, people used both types of information. In cases where the surrogate value is an accurate indicator of the impact of an event, informing people about the happiness of others' can help them to make more realistic forecasts both with and without event information. However, because people place emphasis on event information, they do not maximise the utility of the information presented. As Gilbert (2006) suggested and as Gilbert et al. (2009) showed, people do not fully appreciate the value of surrogate information and instead favour using event information to imagine how the event would affect them differently to others.

Even when it was the only information provided, respondents discounted the surrogate information and imagined that their life would be different to the surrogates. This discounting of surrogate information was not affected by excluding pre-existing knowledge about the target event, changing the size of the surrogate sample, or

increasing the size of the response scale. Despite respondents having no information about the target event - bar the fact that it was some kind of adverse health state - and limited surrogate information, they still adjusted from the information they are provided with, suggesting that withholding event information had not successfully blocked their imaginations. Using only surrogate information as a guide to future emotions is a good way to improve predictions but due both to the tenacity of imagination and because people believe they are different to others, it is not a panacea for eliminating all the bias in affective judgments.

A limitation of our studies is that they all involved respondents contemplating their reactions to imaginary situations. It is possible that patients confronted with real diagnoses of chronic health conditions and given surrogate information would react somewhat differently, though it is easier for us to imagine that their forecasts might be more – rather than less – extreme than those we observe here.

In several of our analyses data were compared across studies, and we acknowledge that sampling differences could have contributed to any effects. However we feel that these have been kept to a minimum as the type of respondents, the method of recruitment, and the nature of the questionnaires were consistent across the studies.

Our studies have shown that people do not spontaneously maximise the value of information about other peoples' happiness when forecasting their own happiness. Future research should address whether the discounting of surrogate information could be reduced by guiding people as to the value of this information. The surrogacy proposal could be more effective as a remedy for biased judgments in real-world

settings if people could be persuaded that surrogate information was a good guide to their own happiness.

In the introduction we discussed the possibility that people might disregard surrogate information because they believe they are different to others. Future research could explore this further by examining whether making the surrogate more similar to the respondents reduces the discounting of surrogate information. It is plausible that if respondents perceive that they have more in common with the surrogate, then they might be more willing to incorporate surrogate happiness into their forecasts.

Our research indicates that in many practical settings, even though it is often not possible to withhold event information, providing surrogate information alongside event information would help people to envisage their future. Knowing the well-being of people living with a health state as well as information about the health state, should help people more realistically imagine the impact on their own well-being. Similarly, being informed of the well-being of company employees alongside information about a job could help potential applicants determine their enjoyment on being hired. Although people do not use knowledge about the happiness of others to their best advantage, incorporating this information with event information should help them to more realistically anticipate the future.

Affective forecasts underlie many life decisions and as a consequence many decisions will be suboptimal because affective forecasts are biased (Sevdalis & Harvey, 2007). Although progress has been made towards improving affective forecasts, our findings indicate that more needs to be done to exploit the full potential of surrogation.

6.9 References

Ayton, P., Pott, A., & Elwakili, N. (2007). Affective forecasting: Why can't people predict their emotions? *Thinking & Reasoning. 13 (1)*, 62-80.

Baron, J., Asch, D. A., Fagerlin, A., Jepson, C., Loewenstein, G., Riis J., et al. (2003). Effect of assessment method on the discrepancy between judgments of health disorders people have and do not have: A web study. *Medical Decision Making. 23*, 422-434.

Brickman, P., Coates, D., & Janoff-Bulman, R. (1978). Lottery winners and accident victims: Is happiness relative? *Journal of Personality & Social Psychology. 36 (8)*, 917-927.

Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd edition). New York: Academic Press.

Dunn, E. W., Wilson, T. D., & Gilbert, D. T. (2004). Location, location, location: The misprediction of satisfaction in housing lotteries. *Personality and Social Psychology Bulletin. 29 (11)*, 1421-1432.

Gilbert, D. T. (2006). *Stumbling on Happiness*. London: Harper Press.

Gilbert, D. T., Driver-Linn, E., & Wilson, T. D. (2002). The trouble with Vronsky: Impact bias in the forecasting of future affective states. In P. Salovey, & L. Feldman-Barrett (Eds.), *The Wisdom of Feeling* (pp. 144-166). New York, NY: Guilford.

Gilbert, D. T., Pinel, E. C., Wilson, T. D., Blumberg, S. L., & Wheatley, T. P. (1998). Immune neglect: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology. 75 (3)*, 617-638.

Gilbert, D. T., Killingsworth, M. A., Eyre, R. N., & Wilson, T. D. (2009). The surprising power of neighborly advice. *Science. 323*, 1617-1619.

Hurst, N. P., Jobanputra, P., Hunter, M., Lambert, M., Lochhead, A., & Brown, H. (1994). Validity of EuroQol – a generic health status instrument – in patients with Rheumatoid Arthritis. *British Journal of Rheumatology. (33)*, 655-662.

Juslin, P., Olsson, H., & Björkman, M. (1997). Brunswikian and Thurstonian origins of bias in probability assessment: On the interpretation of stochastic components of judgment. *Journal of Behavioural Decision Making 10(3)*, 189-209.

Kahneman, D., Fredrickson, B. L., Schreiber, C. A., & Redelmeier, D. A. (1993). When more pain is preferred to less – adding a better end. *Psychological Science. 4(6)*, 401-405.

Kahneman, D., Krueger, A. B., Schkade, D., Schwarz, N., & Stone, A. A. (2006). Would you be happier if you were richer? A focusing illusion. *Science. 312(5782)*, 1908-1910.

Kruger, J. (1999). Lake Wobegon be gone! The "below-average effect" and the egocentric nature of comparative ability judgments. *Journal of Personality & Social Psychology. 77(2)*, 221-232.

Kruger, J., & Burrus, J. (2004). Egocentrism and focalism in unrealistic optimism (and pessimism). *Journal of Experimental Social Psychology*, *40*, 332-340.

Loewenstein, G., & Schkade, D. (1999). Wouldn't it be nice? Predicting future feelings. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: The Foundations of Hedonic Psychology* (pp. 85 – 105). New York: Russell Sage Foundation Press.

Morewedge, C. K., Gilbert, D. T., & Wilson, T. D. (2005). The least likely of times: How remembering the past biases forecasts of the future. *Psychological Science. 16(8),* 626-630.

Norwick, R. J., Gilbert, D. T., & Wilson, T. D. (2006). Surrogation: An antidote for errors in affective forecasting. Cited in D. T. Gilbert. *Stumbling on Happiness*. London: Harper Press.

Riis, J., Loewenstein, G., Baron, J., Jepson, C., Fagerlin, A., & Ubel, P. A. (2005). Ignorance of hedonic adaptation to hemodialysis: A study using ecological momentary assessment. *Journal of Experimental Psychology: General. 134(1),* 3-9.

Schkade, D. A., & Kahneman, D. (1998). Does living in California make people happy? A focusing illusion in judgements of life satisfaction. *Psychological Science. 9 (5),* 340-346.

Sevdalis, N., & Harvey, N. (2007). Biased forecasting of postdecisional regret. *Psychological Science. 18(8),* 678-681.

Svenson, O. (1981). Are we all less risky and more skillful than our fellow drivers. *Acta Psychologica, 47(2),* 143-148.

Thurstone, L.L. (1927). A law of comparative judgement. Psychological Review, 34, 278-286.

Ubel, P. A., Loewenstein, G., Hershey, J., Baron, J., Mohr, T., Asch, D. A., et al. (2001). Do nonpatients underestimate the quality of life associated with chronic health conditions because of a focusing illusion? *Medical Decision Making. 21 (3),* 190-199.

Ubel, P.A., Loewenstein, G., & Jepson, C. (2005). Disability and sunshine: Can hedonic predictions be improved by drawing attention to focusing illusions or emotional adaptation? *Journal of Experimental Psychology: Applied. 11 (2)*, 111-123.

Walsh, E., & Ayton, P. (2009). What would it be like for you and for me? Judged impact of chronic health conditions on happiness. *Medical Decision Making. 29*, 15-22.

Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology, 39(5)*, 806-820.

Wilson, T. D., Wheatley, T., Meyers, J. M., Gilbert, D. T., & Axsom, D. (2000). Focalism: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology. 78 (5)*, 821-836.

Wirtz, D., Kruger, J., Scollon, C. N., & Diener, E. (2003). What to do on spring break? The role of predicted, on-line, and remembered experience in future choice. *Psychological Science. 14(5)*, 520-524.

Chapter 7: General Discussion

7.1 Overview of Existing Literature

Research into affective forecasting has clearly demonstrated that people are inaccurate in their judgments as to the impact of a variety of events on their own well-being and on other people's well-being (Buehler & McFarland, 2001; Gilbert, Driver-Linn, & Wilson, 2002; Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998). In particular, people overestimate the impact of health states, resulting in a disparity between the judgments of people not living with a health state and the actual well-being reports of people living with a health state (Riis et al., 2005; Smith et al., 2006). Not accurately appreciating life with a health state could impact on the provision of health care resources in situations where the biased views of people not living with a health state are used to determine which drugs and treatments are available to patients.

Several explanations for this bias as to the perceived impact of health states have been proposed. The role of the *focusing illusion*, where people incorrectly focus too much attention on the impact of the target event and not enough on other events which could also impact well-being (Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000), has been disputed. Attempts to correct for the effects of the illusion by getting respondents to take part in defocusing exercises designed to encourage consideration of these other events have produced conflicting results (Ayton, Pott, & Elwakili, 2007; Ubel et al., 2001). Instead, *unforeseen adaptation*, where respondents do not take into account the degree to which people adapt to changes in their circumstances, has been concluded to be a more appropriate explanation for biased judgments as to the impact of health states (Ubel, Loewenstein, & Jepson, 2005). Furthermore, it has also been suggested that the confound between the viewpoint of judgments (self/other) and

whether or not the person is living with the health state could also explain the impact bias. An examination of this concluded that the confound could partly explain the bias, although the analyses did not specifically distinguish between the judgments of those living and not living with health states (Baron et al., 2003).

7.2 Summary of Thesis Aims

The aim of this thesis was to examine the bias in judgments as to the impact of a variety of health states on well-being. The predictions of people not living with a health state were compared to the ratings of people living with a health state in order to determine the degree of overestimation in judgment. Furthermore, people living with one health state predicted the impact of other health states to determine whether knowledge of life with one health state provides insight into life with another.

This thesis also examined different explanations as to the impact bias shown for health states. The contributions were examined of the focusing illusion, basing judgments on extreme cases, and the self/other confound, as causes of the bias. Moreover, existing and new measures to correct for these influences on judgments were compared and tested. Finally, the thesis aimed to examine whether a remedy for biased judgments which involved basing predictions on the ratings of other people rather than on event information, would work in situations where it was not possible to withhold event information.

7.3 Findings and Conclusions

This thesis demonstrated a bias in judgments of the impact of health states on well-being, consistent with previous research. In chapters 3 to 6, people not living with

a health state made extreme predictions as to the impact of that health state on emotional well-being. Moreover, in chapter 3 the extent of this extremeness was measured because predicted happiness could be compared to the actual ratings of people living with the health states. In this chapter, the *disability paradox* was clearly revealed: people living with the health states reported they were far happier than people not living with the health states predicted. This was despite the fact no difference was shown in the actual happiness of the two groups. Interestingly, this research showed that people living with a health state were aware that the general public would be biased in their judgments as to life with a health state, but they underestimated just how biased the opinions of people not living with the health states would be. Additionally, people living with a health state made less extreme judgments than those not living with a health state as to the impact of other health states - suggesting they were more aware of what life would be like with another health state - but their predictions were still biased. Bias in the judgments of people not living with health states has been clearly shown in previous research (e.g. Riis et al., 2005). However, the findings of this thesis demonstrate that people living with health states are also biased in their judgments of the impact of their own health state on other people, and of other health states.

This thesis examined the role of the focusing illusion as a cause of the impact bias for health states by exploring whether it was possible to defocus predictions using a variety of methods. A version of Wilson et al.'s (2000) diary defocusing method and Ubel et al.'s (2001) life domain defocusing method did not successfully defocus predictions for the impact of five different health states (chapter 3). This was for both

predictions made by people living and not living with health states. Furthermore, when modifications were made to the life domain method, it was still unsuccessful at defocusing predictions (chapter 4). This lack of success in defocusing with these methods is consistent with the findings of previous research (Ubel et al., 2001; Ubel et al., 2005), which subsequently have downplayed the role of the focusing illusion as an explanation for the impact bias for health states. Although Ubel et al. (2005) conceded that the defocusing methods used may have been inadequate, they concluded that the focusing illusion was unlikely to be the cause of bias in judgments of the impact of events with long-term consequences (e.g. a health state).

However, this thesis has demonstrated that successful defocusing is possible using a new defocusing method which incorporates consideration of the emotional impact of the event (chapter 4). Furthermore, unlike existing defocusing methods, this new method reduced both the impact bias in judgments of the impact of a health state and of winning the lottery, and reduced bias in predicted happiness and predicted quality of life (QOL). This method encouraged respondents to think more about the wider emotional impact of an event before predicting general well-being but was only successful when used with a rating scale which allowed explicit consideration of how predicted feelings would change from current feelings. This is a different approach for a defocusing method to existing defocusing methods because, instead of prompting people to consider other events, it encourages them to consider other feelings. Therefore, based on the success of this *emotional impact* defocusing method, it is concluded that the focusing illusion is a plausible and strong explanation for the impact bias shown for a variety of events, including health states. The lack of successful

defocusing with the diary and life domain defocusing methods is more likely due to the ineffectiveness of these methods, rather than the focusing illusion not causing the bias in the first place.

Sevdalis and Harvey (2009) propose that defocusing tasks moderate ratings because they interfere with the cognitive processing of judgments of the affective impact of an event. They found that getting respondents to solve anagrams or monitor their mood had the same effect on ratings as completing a diary task. Although this theory can provide an account for the success of our *emotional impact* defocusing method, it fails to explain why our other defocusing attempts - which would have also interfered with cognitive processing - failed to moderate predictions. Our findings suggest that a successful defocusing method does not just simply entail disrupting working memory.

This thesis also examined a new and alternative method of reducing the impact bias for health states which involved informing respondents about the potential wider range of judgments (chapter 5). This suggestion was based on the concept that as people have been shown to base their affective forecasts for familiar events on recalled extreme instances (Morewedge, Gilbert, & Wilson, 2005), when judging the impact of a novel event (such as a heath state) people might also base their judgments on extreme cases. Therefore, making them aware that there could be a potential distribution of well-being ratings should stop them from anchoring on the extreme case. Although no direct measure was made as to whether respondents did base their judgments on extreme cases, predictions were less extreme once respondents' attention had been drawn to the potential distribution of judgments. Furthermore this was achieved

without providing any more information about the health states being judged. It is concluded that respondents do not automatically consider the wider range of well-being of people living with health states and that encouraging consideration of this range can reduce the impact bias in their predictions.

The self/other confound as an explanation for the impact bias for health states was also examined in this thesis. Chapter 3 revealed that people did make different self/other predictions depending on whether or not they were living with a health state: People not living with a health state thought they would be unhappier than other people if living with a health state, whereas people living with a health state thought they were happier than other people with the same health state. This finding is consistent with Kruger's (1999) idea that people consider themselves below-average at difficult tasks (people not living with a health state rating the impact of health states they have no experience of) and above-average at easy tasks (people living with a health state rating their own health state). However the confound can not explain the impact bias because although the people not living with the health states were biased in their judgments as to the happiness of others, they made more extreme predictions for their own happiness. As their "self" predictions were more extreme than their "other" predictions, it is concluded that the confound in the viewpoint of judgments between those living and not living with a health state can not account for the impact bias.

Finally, this thesis explored Gilbert's (2006) proposal that the impact bias is caused by failings in imagination, and a remedy is to withhold event information and replace it with the ratings of other people who are experiencing the event (surrogate information). As this suggestion has only been tested in scenarios where it is possible

to replace one type of information with another, this thesis explored how practical this proposal would be in situations, such as when diagnosing a health state, where it would be impossible to withhold event information (chapter 6). It was examined whether people would use surrogate information when presented alongside event information, to make more moderate forecasts. It was found that, consistent with Gilbert, Killingsworth, Eyre, & Wilson's (2009) findings, knowledge about others' happiness did result in less extreme predictions as to the impact of a health state on respondent's own happiness. However, the influence of this surrogate information was diminished when respondents received it along with health state information. Based on these findings it is concluded that although informing people about the happiness of others alongside health state information does reduce the impact bias, the full value of the surrogacy proposal can not be recognised because it is not a practical remedy in many applied situations where event information can not be withheld.

7.4 Implications of these Findings

The findings of this thesis have implications as to whose judgments should be used in health care policy decisions. As discussed in the main introduction, currently organisations such as the National Institute of Clinical Excellence (NICE) use the ratings of people not living with health states to determine which resources should be available to patients. The affective forecasting literature has clearly demonstrated a bias in the judgments of people not living with health states as to their perceived impact of health states on well-being, and therefore the suitability of using their judgments in resource allocation decisions has been questioned.

An alternative proposal is to use the judgments of patients, despite it being recognised that there could also be some error in their ratings. This thesis adds to this concern over using the viewpoint of patients because it has been demonstrated that people living with a health state are also biased in their judgments of the impact of health states. For their own health state, they believe that their own lives have been affected differently than other peoples' lives, suggesting that they believe they are able to cope better with the health state than others. For other health states, they overestimate the impact although their predictions are not as extreme as the predictions of those not living with a health state. This suggests that whilst on one hand living with a health state provides some awareness of what life would be like with another health state, on the other hand people living with a health state are biased as to how they think they have been affected compared to others. This would therefore suggest that using patients' views to determine resource allocation could also result in a mis-prioritisation of resources, because they fail to accurately appreciate the impact on their own lives and on other peoples' lives.

What practical suggestions could be made to reduce the bias in judgments by people contemplating the impact of health states or treatments? Based on the findings of this thesis, several possible methods could be used to encourage people to think in more detail about the impact. People could be guided to think about the fuller emotional impact of an event, rather than just considering how life with a health state would affect one aspect of their emotional well-being. Additionally, people could be provided with the well-being ratings of people currently living with the health state along with information about the health state, to encourage them to appreciate that the

impact of the event would not be as extreme as they may believe. Furthermore, knowing the happiness of people living with the health state could also draw attention to the potential range of well-being judgments, which would act as a deterrent from just focusing on the worst-case scenario. All of these methods would help people to envisage a bigger more accurate picture of what life is like with a health state.

7.5 Limitations of the Findings

The majority of the judgments within this thesis were solicited via online questionnaires. This meant that large numbers of respondents were able to be recruited in a cost-effective and time-efficient manner. Additionally, this method reduced any potential social desirability bias which could influence peoples' judgments in situations where they are asked to give opinions about other people. Conducting this research online meant that not only were respondents anonymous but they had no direct contact with the experimenter. However, it must be acknowledged that due to the nature of this method it is possible that respondents did not always suitably engage with the questionnaire. It is also unknown how much time, attention, and thought each respondent gave to their judgments. Nonetheless, arguably the advantages of using this type of method far outweigh these potential problems.

Aside from chapter 3, where the happiness of people living with health states was measured, the extremeness of the predictions of people not living with a health state could only be inferred. However, it has been shown that there is no or little difference in the happiness of people living with a variety of health states compared to the general population (Brickman, Coates, & Janoff-Bulman, 1978; Riis et al., 2005; Schulz & Decker, 1985). For the health states examined in this thesis, there is no

reason to believe that people living with these health states would be more or less happy than those in the above mentioned literature, and therefore that there would not be a difference in their happiness compared with the happiness of the general population. For that reason, and based on the extensive literature showing that people overestimate the impact of health states, we can assume that the predictions of our respondents displayed the impact bias.

All of the studies in this thesis involved respondents considering their reactions to hypothetical imagined scenarios, which the majority of the time was a health state. Due to the nature of this topic, in many situations it is unpractical and unethical to design experimental studies whereby people will actually experience the predicted state. However there are situations in which the ratings of people experiencing diagnosis of a health state could be examined e.g. peoples' ratings before and after receiving test results. Therefore it remains possible that people actually confronted with a situation where they are being diagnosed with a health state could make more or less extreme judgments as to how that health state would impact well-being.

7.6 Directions for Future Research

Future research could examine further the issues surrounding whose judgments to use in resource allocation decisions. So far, much attention has been given to the biased views of people not living with health states, and therefore more understanding is needed as to how people living with health states view their own well-being and that of others living with the same health state. In particular, more needs to be known about how people living with health states adapt to the changes in their circumstances, how much they are aware of the degree to which they will have adapted, and how they think

adaptation would influence both their own and other peoples' well-being. Several studies could be designed to explore the actual and predicted adaptation of people living with health states. For example, it has previously been shown that patients evaluating their QOL do not take into consideration how much they have adapted to their health state (Dolan & Kahneman, 2008). Furthermore, this thesis has shown that as people think they are happier than others with their health state, they fail to realise that others would adapt too. Future research could explore how aware patients were of their adaptation by getting them to recall and rate their QOL at progressing time-points before and after their diagnosis. Additionally it could also be examined whether people predicted the same rate of adaptation for others living with their health state.

It could also be examined whether people adapt at a different rate depending on the degree of severity of their health state. It is easy to imagine that people living with a severe form of a health state would adapt at a slower rate to people living with a milder form. However it is possible that there are more treatments and support facilities for people with severe forms of a health state, and therefore a paradox may exist where seriously ill patients adapt quicker and report a greater QOL than patients who are less ill. It has been shown that people adapt more quickly to intense states than mild states because of psychological processes which reduce the impact of the intense state (Gilbert, Lieberman, Morewedge, & Wilson, 2004). It would be interesting to examine whether these processes attenuate the impact of differing degrees of severity of a health state, and furthermore whether there are also external reasons for any difference in adaptation.

Finally, future research might also like to examine whether people living with health states are more or less sensitive than the general population to differences in the QOL of people with differing degrees of severity of a health state. This would build on the work of Lacey et al. (2006) who found that people not living with the health state were much less sensitive to the difference in mild and severe lung disease in comparison to people living with lung disease. This could be examined by soliciting the well-being ratings of people with differing degrees of severity of a health state, getting each of them to predict the well-being of people with different degrees of severity to their own, and comparing their predictions to those of the general population.

7.7 Summary

In summary, the research in this thesis builds on the findings of existing affective forecasting literature by further demonstrating the bias in judgments as to the impact of health states on well-being. Moreover evidence for this bias has been extended and shown in both the judgments of people living and not living with health states. This thesis has addressed some of the probable causes for this bias, and explored and found measures to improve the accuracy of peoples' predictions. Practical suggestions for helping people contemplating the impact of health states to more accurately envisage the impact are made, as well as suggested directions for future research.

7.8 References

Ayton, P., Pott, A., & Elwakili, N. (2007). Affective forecasting: Why can't people predict their emotions? *Thinking and Reasoning. 13*, 62–80.

Baron, J., Asch, D. A., Fagerlin, A., Jepson, C., Loewenstein, G., Riis, J., et al. (2003). Effect of assessment method on the discrepancy between judgments of health disorders people have and do not have: A web study. *Medical Decision Making. 23*, 422-434.

Brickman, P., Coates, D., & Janoff-Bulman, R. (1978). Lottery winners and accident victims: Is happiness relative? *Journal of Personality & Social Psychology. 36*, 917-927.

Buehler, R., & McFarland, C. (2001). Intensity bias in affective forecasting: The role of temporal focus. *Personality & Social Psychology Bulletin. 11*, 1480-1493.

Dolan, P., & Kahneman, D. (2008). Interpretations of utility and their implications for the valuation of health. *The Economic Journal. 118*, 215-234.

Gilbert, D. T. (2006). *Stumbling on Happiness*. London: Harper Press.

Gilbert, D. T., Driver-Linn, E., & Wilson, T. D. (2002). The trouble with Vronsky: Impact bias in the forecasting of future affective states. In P. Salovey, & L. Feldman-Barrett (Eds.), *The wisdom of feeling* (pp. 144-166). New York: Guilford.

Gilbert, D. T., Killingsworth, M. A., Eyre, R. N., & Wilson, T. D. (2009). The surprising power of neighborly advice. *Science. 323*, 1617-1619.

Gilbert, D. T., Lieberman, M. D., Morewedge, C. K., & Wilson, T. D. (2004). The peculiar longevity of things not so bad. *Psychological Science. 15*, 14-19.

Gilbert, D. T., Pinel, E. C., Wilson, T. D., Blumberg, S. L., & Wheatley, T. P. (1998). Immune neglect: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology. 75*, 617-638.

Kruger, J. (1999). Lake Wobegon be gone! The ‘‘below-average effect’’and the egocentric nature of comparative ability judgments. *Journal of Personality & Social Psychology. 77*, 221–32.

Lacey, H. P., Fagerlin, A., Loewenstein, G., Smith, D. M., Riis, J., & Ubel, P.A. (2006). It must be awful for them: Perspective and task context affects ratings for health conditions. *Judgment & Decision Making. 1*, 146-152.

Morewedge, C. K., Gilbert, D. T., & Wilson, T. D. (2005). The least likely of times: How remembering the past biases forecasts of the future. *Psychological Science. 16(8)*, 626-630.

Riis, J., Loewenstein, G., Baron, J., Jepson, C., Fagerlin, A., & Ubel, P. A. (2005). Ignorance of hedonic adaptation to hemodialysis: A study using ecological momentary assessment. *Journal of Experimental Psychology: General. 134*, 3-9.

Schulz, R., & Decker, S. (1985). Long-term adjustment to physical disability: The role of social support, perceived control, and self-blame. *Journal of Personality & Social Psychology. 48*, 1162-1172.

Sevdalis, N., & Harvey, N. (2009). Reducing the impact bias in judgments of post-decisional affect: Distraction or task interference? *Judgment and Decision Making. 4(4)*, 287-296.

Smith, D. M., Sherriff, R. L., Damschroder, L., Loewenstein, G., & Ubel, P. A. (2006). Misremembering colostomies: Former patients give lower utility ratings than do current patients. *Health Psychology. 25*, 688-695.

Ubel, P. A., Loewenstein, G., Hershey, J., Baron, J., Mohr, T., Asch, D. A., & Jepson, C. (2001). Do nonpatients underestimate the quality of life associated with chronic health conditions because of a focusing illusion? *Medical Decision Making. 21*, 190-199.

Ubel, P. A., Loewenstein, G., & Jepson, C. (2005). Disability and sunshine: Can hedonic predictions be improved by drawing attention to focusing illusions or emotional adaptation? *Journal of Experimental Psychology: Applied. 11*, 111-123.

Wilson, T. D., Wheatley, T., Meyers, J. M., Gilbert, D. T., & Axsom, D. (2000). Focalism: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology. 78*, 821-836.